

=> fil reg

FILE 'REGISTRY' ENTERED AT 16:05:21 ON 12 JAN 2006

=> d his

FILE 'HCAPLUS' ENTERED AT 14:46:49 ON 12 JAN 2006

L1 1 S US20040197667/PN  
SEL RN

FILE 'REGISTRY' ENTERED AT 14:47:12 ON 12 JAN 2006

L2 66 S E1-E66  
L3 STR  
L4 12 S L3  
L5 STR L3  
L6 181 S L5 FUL  
SAV WEI192/A L6  
L7 1 S 67-68-5/RN  
L8 1 S 68-12-2/RN  
L9 1 S 75-05-8/RN  
L10 1 S 79-16-3/RN  
L11 1 S 96-48-0/RN  
L12 1 S 96-49-1/RN  
L13 1 S 123-39-7/RN  
L14 1 S 616-42-2/RN  
L15 1 S 623-96-1/RN  
L16 1 S 872-50-4/RN

FILE 'HCAPLUS' ENTERED AT 15:23:17 ON 12 JAN 2006

L17 253 S L6  
L18 105215 S L7-L16  
L19 108 S L17 AND L18  
L20 2 S L19 AND (THIOPHEN? OR SULFONYL?)

FILE 'REGISTRY' ENTERED AT 15:25:14 ON 12 JAN 2006

L21 1 S 756901-23-2/RN  
L22 1 S 756901-22-1/RN  
L23 1 S 90076-65-6/RN  
L24 1 S 28452-93-9/RN  
L25 1 S 5535-48-8/RN  
L26 1 S 3680-02-2/RN  
L27 1 S 1889-59-4/RN  
L28 1 S 620-32-6/RN  
L29 1 S 127-63-9/RN  
L30 1 S 126-33-0/RN  
L31 1 S 77-77-0/RN  
L32 1 S 67-71-0/RN

FILE 'HCAPLUS' ENTERED AT 15:29:40 ON 12 JAN 2006

L33 10071 S L21-L32  
L34 23 S L19 AND L33

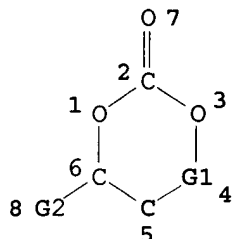
FILE 'REGISTRY' ENTERED AT 15:33:13 ON 12 JAN 2006

L35 1 S 131651-65-5/RN  
L36 1 S 33454-82-9/RN  
L37 1 S 1120-71-4/RN

FILE 'HCAPLUS' ENTERED AT 16:00:23 ON 12 JAN 2006

L38 4327 S L35-L37  
L39 14 S L19 AND L38

=> d que 141  
L5 STR



GRAPH ATTRIBUTES:  
RSPEC I  
NUMBER OF NODES IS 8

L6	181	SEA FILE=REGISTRY	SSS FUL	L5	
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L9	1	SEA FILE=REGISTRY	ABB=ON	PLU=ON	75-05-8/RN
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L11	1	SEA FILE=REGISTRY	ABB=ON	PLU=ON	96-48-0/RN
L12	1	SEA FILE=REGISTRY	ABB=ON	PLU=ON	96-49-1/RN
L13	1	SEA FILE=REGISTRY	ABB=ON	PLU=ON	123-39-7/RN
L14	1	SEA FILE=REGISTRY	ABB=ON	PLU=ON	616-42-2/RN
L15	1	SEA FILE=REGISTRY	ABB=ON	PLU=ON	623-96-1/RN
L16	1	SEA FILE=REGISTRY	ABB=ON	PLU=ON	872-50-4/RN
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L18	105215	SEA FILE=HCAPLUS	ABB=ON	PLU=ON	(L7 OR L8 OR L9 OR L10 OR L11 OR L12 OR L13 OR L14 OR L15 OR L16)
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L22	1	SEA FILE=REGISTRY	ABB=ON	PLU=ON	756901-22-1/RN
L23	1	SEA FILE=REGISTRY	ABB=ON	PLU=ON	90076-65-6/RN
L24	1	SEA FILE=REGISTRY	ABB=ON	PLU=ON	28452-93-9/RN
L25	1	SEA FILE=REGISTRY	ABB=ON	PLU=ON	5535-48-8/RN
L26	1	SEA FILE=REGISTRY	ABB=ON	PLU=ON	3680-02-2/RN
L27	1	SEA FILE=REGISTRY	ABB=ON	PLU=ON	1889-59-4/RN
L28	1	SEA FILE=REGISTRY	ABB=ON	PLU=ON	620-32-6/RN
L29	1	SEA FILE=REGISTRY	ABB=ON	PLU=ON	127-63-9/RN
L30	1	SEA FILE=REGISTRY	ABB=ON	PLU=ON	126-33-0/RN
L31	1	SEA FILE=REGISTRY	ABB=ON	PLU=ON	77-77-0/RN
L32	1	SEA FILE=REGISTRY	ABB=ON	PLU=ON	67-71-0/RN
L33	10071	SEA FILE=HCAPLUS	ABB=ON	PLU=ON	(L21 OR L22 OR L23 OR L24 OR L25 OR L26 OR L27 OR L28 OR L29 OR L30 OR L31 OR L32)

L34 23 SEA FILE=HCAPLUS ABB=ON PLU=ON L19 AND L33  
 L35 1 SEA FILE=REGISTRY ABB=ON PLU=ON 131651-65-5/RN  
 L36 1 SEA FILE=REGISTRY ABB=ON PLU=ON 33454-82-9/RN  
 L37 1 SEA FILE=REGISTRY ABB=ON PLU=ON 1120-71-4/RN  
 L38 4327 SEA FILE=HCAPLUS ABB=ON PLU=ON (L35 OR L36 OR L37)  
 L39 14 SEA FILE=HCAPLUS ABB=ON PLU=ON L19 AND L38  
 L40 27 SEA FILE=HCAPLUS ABB=ON PLU=ON L34 OR L39  
 L41 25 SEA FILE=HCAPLUS ABB=ON PLU=ON L40 AND ELECTROLYT?

=> fil hcap  
 FILE 'HCAPLUS' ENTERED AT 16:05:41 ON 12 JAN 2006

=> d l41 1-25 ibib abs hitstr hitind

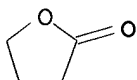
L41 ANSWER 1 OF 25 HCAPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2005:1106707 HCAPLUS  
 DOCUMENT NUMBER: 143:370054  
 TITLE: Overcharge protection for electrochemical cells  
 INVENTOR(S): Amine, Khalil; Liu, Jun; Jambunathan, Krishnakumar; Peterson, Brian Keith; Dantsin, Gennady  
 PATENT ASSIGNEE(S): USA  
 SOURCE: U.S. Pat. Appl. Publ., 16 pp.  
 CODEN: USXXCO  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2005227143	A1	20051013	US 2005-97810	2005 0401
EP 1587158	A2	20051019	EP 2005-7806	2005 0408
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK, BA, HR, IS, YU				
JP 2005302727	A2	20051027	JP 2005-114017	2005 0411
PRIORITY APPLN. INFO.:				US 2004-561193P P 2004 0409
				US 2005-97810 A 2005 0401

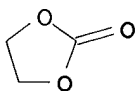
AB The invention relates to an improvement in a cell which is normally susceptible to damage from overcharging comprised of a neg. electrode, a pos. electrode, and an electrolyte comprised of an overcharge protection salt carried in a carrier or

solvent. Representative overcharge protection salts are embraced by the formula: MaQ, where M is an electrochem. stable cation selected from the group consisting of alkali metal, alkaline earth metal, tetraalkylammonium, or imidazolium groups, and Q is a borate or heteroborate cluster and a is the integer 1 or 2.

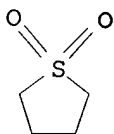
IT 96-48-0,  $\gamma$ -Butyrolactone 96-49-1, Ethylene carbonate 126-33-0, Sulfolane 623-96-1, Dipropyl carbonate 3967-54-2, Chloroethylene carbonate 33454-82-9, Lithium triflate 90076-65-6  
(overcharge protection for electrochem. cells)  
RN 96-48-0 HCAPLUS  
CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



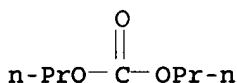
RN 96-49-1 HCAPLUS  
CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



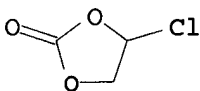
RN 126-33-0 HCAPLUS  
CN Thiophene, tetrahydro-, 1,1-dioxide (8CI, 9CI) (CA INDEX NAME)



RN 623-96-1 HCAPLUS  
CN Carbonic acid, dipropyl ester (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

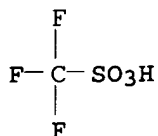


RN 3967-54-2 HCAPLUS  
CN 1,3-Dioxolan-2-one, 4-chloro- (9CI) (CA INDEX NAME)



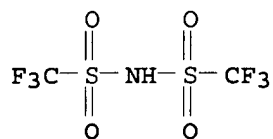
RN 33454-82-9 HCAPLUS  
CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA

INDEX NAME)



● Li

RN 90076-65-6 HCAPLUS

CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-  
, lithium salt (9CI) (CA INDEX NAME)

● Li

IC ICM H01M010-36

INCL 429188000; 429199000; 429200000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
Section cross-reference(s): 72IT Battery **electrolytes**

Redox potential

(overcharge protection for electrochem. cells)

IT 96-47-9, 2-Methyltetrahydrofuran 96-48-0,  
 γ-Butyrolactone 96-49-1, Ethylene carbonate  
 105-37-3, Ethyl propionate 105-54-4, Ethyl butyrate 105-58-8,  
 Diethyl carbonate 108-29-2, γ-Valerolactone 108-32-7,  
 Propylene carbonate 109-99-9, Thf, uses 110-71-4,  
 1,2-Dimethoxyethane 112-49-2, Triglyme 112-60-7, Tetraethylene  
 glycol 115-10-6, Dimethylether 126-33-0, Sulfolane  
 141-78-6, Ethyl acetate, uses 497-26-7, 2-Methyl-1,3-dioxolane  
 539-82-2, Ethyl valerate 554-12-1, Methyl propionate 590-01-2,  
 Butyl propionate 616-38-6, Dimethyl carbonate 623-42-7, Methyl  
 butyrate 623-53-0, Ethyl Methyl carbonate 623-96-1,  
 Dipropyl carbonate 629-14-1, 1,2-Diethoxyethane 646-06-0,  
 1,3-Dioxolane 872-36-6, Vinylene carbonate 1072-47-5,  
 4-Methyl-1,3-dioxolane 1513-87-7, Bis(2,2,2-  
 trifluoroethyl)carbonate 2797-28-6, Lithium  
 tetrakis(pentafluorophenyl)borate 3967-54-2,  
 Chloroethylene carbonate 4427-96-7, Vinyl ethylene carbonate  
 7550-35-8, Lithium bromide 7791-03-9, Lithium perchlorate  
 14283-07-9, Lithium tetrafluoroborate 14485-20-2, Lithium  
 tetraphenylborate 18424-17-4, Lithium hexafluoroantimonate  
 19836-78-3, 3-Methyl-2-oxazolidinone 21324-40-3, Lithium  
 hexafluorophosphate 25322-68-3, Polyethylene glycol  
 29935-35-1, Lithium hexafluoroarsenate 33454-82-9,

Lithium triflate 35363-40-7, Ethyl propyl carbonate  
 37830-90-3, Dimethylvinylene carbonate 56525-42-9, Methyl propyl  
 carbonate 90076-65-6 132843-44-8 154496-21-6  
 156783-95-8 866482-08-8 866482-09-9 866482-10-2  
 866482-11-3 866482-12-4 866482-13-5 866482-14-6  
 (overcharge protection for electrochem. cells)

L41 ANSWER 2 OF 25 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:810848 HCAPLUS

DOCUMENT NUMBER: 143:232653

TITLE: **Electrolyte** solution for battery

INVENTOR(S): Yamaguchi, Akira; Nakajima, Kaoru; Fujishige,  
 Yusuke; Fukushima, Yuzuru; Nagamine, Masayuki

PATENT ASSIGNEE(S): Sony Corporation, Japan

SOURCE: Eur. Pat. Appl., 30 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO. -----	KIND ----	DATE -----	APPLICATION NO. -----	DATE
EP 1564833	A2	<u>20050817</u>	EP 2005-2718	2005 0209
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK, BA, HR, IS, YU				
JP 2005228565	A2	20050825	JP 2004-35294	2004 0212
US 2005196670	A1	20050908	US 2005-49432	2005 0201
PRIORITY APPLN. INFO.:			JP 2004-35294	A 2004 0212

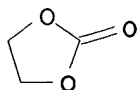
AB Provided are an **electrolyte** solution and a battery which  
 are capable of improving cycle characteristics. An anode includes  
 a simple substance, an alloy or a compound of a metal element or a  
 metalloid element capable of forming an alloy with lithium as an  
 anode active material. A separator is impregnated with an  
**electrolyte** solution formed through dissolving an  
**electrolyte** salt in a solvent. The **electrolyte**  
 salt includes a first **electrolyte** salt including  
 LiB(C2O4)2 and a second **electrolyte** salt including at  
 least one kind selected from the group consisting of LiPF6, LiBF4,  
 LiN(CF3SO2)2, LiN(C2F5SO2)2, LiClO4, LiAsF6 and LiC(CF3SO2)3. In  
 the solvent, 4-fluoroethylene carbonate is included. A coating is  
 formed on the anode by the first **electrolyte** salt, and  
 high ionic conductivity can be obtained by the second **electrolyte**  
 salt. Further an oxidation-decomposition reaction of the  
**electrolyte** solution which occurs in a cathode can be  
 prevented by 4-fluoroethylene carbonate.

IT 96-49-1, Ethylene carbonate 3967-54-2

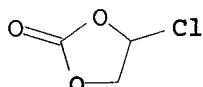
90076-65-6 114435-02-8

(**electrolyte** solution for battery)

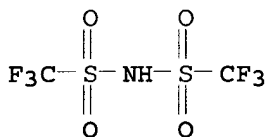
RN 96-49-1 HCAPLUS  
 CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



RN 3967-54-2 HCAPLUS  
 CN 1,3-Dioxolan-2-one, 4-chloro- (9CI) (CA INDEX NAME)

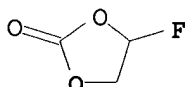


RN 90076-65-6 HCAPLUS  
 CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (9CI) (CA INDEX NAME)



● Li

RN 114435-02-8 HCAPLUS  
 CN 1,3-Dioxolan-2-one, 4-fluoro- (9CI) (CA INDEX NAME)



IC ICM H01M010-40  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 ST battery **electrolyte**  
 IT Battery **electrolytes**  
     (**electrolyte** solution for battery)  
 IT Secondary batteries  
     (lithium; **electrolyte** solution for battery)  
 IT **96-49-1**, Ethylene carbonate 616-38-6, Dimethyl carbonate  
**3967-54-2** 7440-21-3, Silicon, uses 7440-31-5, Tin,  
 uses 7791-03-9, Lithium perchlorate 12190-79-3, Cobalt lithium  
 oxide (CoLiO<sub>2</sub>) 12645-62-4 12668-36-9 14283-07-9, Lithium  
 tetrafluoroborate 14797-73-0, Perchlorate 14874-70-5,  
 Tetrafluoroborate 16919-18-9, Hexafluorophosphate 16973-45-8,  
 Hexafluoroarsenate 21324-40-3, Lithium hexafluorophosphate  
 29935-35-1, Lithium hexafluoroarsenate 60225-00-5  
**90076-65-6 114435-02-8** 125579-65-9  
 132404-42-3 132843-44-8 207685-67-4 244761-29-3, Lithium

bis(oxalato)borate 848629-92-5  
(electrolyte solution for battery)

L41 ANSWER 3 OF 25 HCAPLUS COPYRIGHT 2006 ACS on STN  
ACCESSION NUMBER: 2005:692424 HCAPLUS  
DOCUMENT NUMBER: 143:176231  
TITLE: Secondary lithium batteries showing high  
discharge capacity and excellent  
charge-discharge cycling performance  
INVENTOR(S): Adachi, Momoe  
PATENT ASSIGNEE(S): Sony Corp., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 21 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

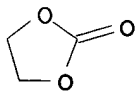
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2005209377	A2	<u>20050804</u>	JP 2004-11831	2004 0120
PRIORITY APPLN. INFO.: JP 2004-11831				2004 0120

OTHER SOURCE(S): MARPAT 143:176231

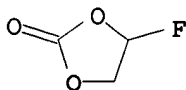
AB In the batteries, at least a part of anode active mass is alloyed with anode current collectors, and the batteries contain anions expressed by  $[PFa[CHbFc(CF_3)d]e]-$  ( $a = 1, 2, 3, 4, 5$ ;  $b = 0, 1$ ;  $c = 0, 1, 2, 3$ ;  $d = 0, 1, 2, 3$ ;  $e = 1, 2, 3, 4$ ;  $a + e = 6$ ;  $b + c + d = 3$ ;  $b + c \neq 0$ ). Alternatively, the anode active mass layers are formed on anode current collectors by vapor deposition, electroplating, electroless plating, or by sintering. The anode active mass contain  $\geq 1$  selected from Si, Si alloys, Si compds., Sn, Sn alloys, and Sn compds. The anodes inhibit powdering and the electrolytes show high stability.

IT 96-49-1, Ethylene carbonate 114435-02-8,  
4-Fluoro-1,3-dioxolan-2-one  
(electrolyte solvents; secondary Li batteries containing fluoroalkylphosphate electrolytes)

RN 96-49-1 HCAPLUS  
CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)

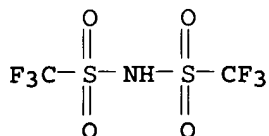


RN 114435-02-8 HCAPLUS  
CN 1,3-Dioxolan-2-one, 4-fluoro- (9CI) (CA INDEX NAME)





IT 90076-65-6, Lithium bis(trifluoromethylsulfonyl)amide  
 (electrolytes; secondary Li batteries containing  
 fluoroalkylphosphate electrolytes)  
 RN 90076-65-6 HCAPLUS  
 CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-  
 , lithium salt (9CI) (CA INDEX NAME)



● Li

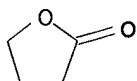
IC ICM H01M004-02  
 ICS H01M004-04; H01M004-38; H01M004-64; H01M010-40  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 ST lithium battery electrolyte hydrofluoroalkylphosphate;  
 silicon anode lithium battery; tin anode lithium battery  
 IT Coating process  
 (electroless, formation of anode active mass on current  
 collectors; secondary Li batteries containing fluoroalkylphosphate  
 electrolytes)  
 IT Electrodeposition  
 Sintering  
 Vapor deposition process  
 (formation of anode active mass on current collectors;  
 secondary Li batteries containing fluoroalkylphosphate  
 electrolytes)  
 IT Secondary batteries  
 (lithium; secondary Li batteries containing fluoroalkylphosphate  
 electrolytes)  
 IT Battery anodes  
 Battery electrolytes  
 (secondary Li batteries containing fluoroalkylphosphate  
 electrolytes)  
 IT Silicon alloy, base  
 Tin alloy, base  
 (anodes; secondary Li batteries containing fluoroalkylphosphate  
 electrolytes)  
 IT 7440-50-8, Copper, uses  
 (anode current collectors; secondary Li batteries containing  
 fluoroalkylphosphate electrolytes)  
 IT 7440-21-3, Silicon, uses 7440-31-5, Tin, uses  
 (anodes; secondary Li batteries containing fluoroalkylphosphate  
 electrolytes)  
 IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate  
 114435-02-8, 4-Fluoro-1,3-dioxolan-2-one  
 (electrolyte solvents; secondary Li batteries containing  
 fluoroalkylphosphate electrolytes)  
 IT 7791-03-9, Lithium perchlorate 14283-07-9, Lithium  
 tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate  
 29935-35-1, Lithium hexafluoroarsenate 90076-65-6,  
 Lithium bis(trifluoromethylsulfonyl)amide 132404-42-3, Lithium

tris(trifluoromethylsulfonyl)methanide 377739-48-5 403699-21-8  
 403699-22-9, Lithium trifluorotris(perfluoroethyl)phosphate  
 (electrolytes; secondary Li batteries containing  
 fluoroalkylphosphate electrolytes)

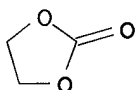
L41 ANSWER 4 OF 25 HCAPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2005:402673 HCAPLUS  
 DOCUMENT NUMBER: 142:466432  
 TITLE: Secondary battery with non-aqueous  
 electrolyte  
 INVENTOR(S): Ohzuku, Tsutomu; Yoshizawa, Hiroshi; Nakura,  
 Kensuke  
 PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd.,  
 Japan  
 SOURCE: Eur. Pat. Appl., 32 pp.  
 CODEN: EPXXDW  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1530248	A2	20050511	EP 2004-256668	2004 1028
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK, HR				
JP 2005142047	A2	20050602	JP 2003-377954	2003 1107
US 2005147889	A1	20050707	US 2004-979764	2004 1103
PRIORITY APPLN. INFO.:			JP 2003-377954	A 2003 1107

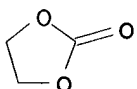
AB As an alternative for Pb-acid batteries, an inexpensive 2 V nonaq.  
 electrolyte-based secondary battery is presented. The  
 battery has a good cycle lifetime at high rates due to prevention  
 of volume changes during charging and discharging. This secondary  
 battery has a cathode-active material with a layered structure,  
 represented by  $Li_{1+\alpha}[Me]O_2$ , where  $0 \leq \alpha < 0.2$ ,  
 and Me is a transition metal including Ni and at least one  
 selected from Mn, Fe, Co, Ti and Cu, and including elemental Ni  
 and elemental Co in substantially the same ratio. The battery  
 also has an anode-active material,  $Li_4Ti_5O_{12}$  ( $Li[Li_{1/3}Ti_{5/3}]O_4$ ).  
 IT 96-48-0 96-49-1, Ethylene carbonate  
 96-49-1D, Ethylene carbonate, fluorinated 126-33-0  
 , Sulpholane 114435-02-8, Fluoroethylene carbonate  
 (electrolyte containing; in secondary battery with  
 non-aqueous electrolyte)  
 RN 96-48-0 HCAPLUS  
 CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



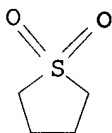
RN 96-49-1 HCAPLUS  
CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



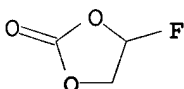
RN 96-49-1 HCAPLUS  
CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



RN 126-33-0 HCAPLUS  
CN Thiophene, tetrahydro-, 1,1-dioxide (8CI, 9CI) (CA INDEX NAME)



RN 114435-02-8 HCAPLUS  
CN 1,3-Dioxolan-2-one, 4-fluoro- (9CI) (CA INDEX NAME)



IC ICM H01M004-48  
ICS H01M004-50; H01M004-52  
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
ST secondary battery nonaq **electrolyte** anode cathode  
IT Halides  
(in non-aqueous **electrolyte** for secondary battery)  
IT Polyesters, uses  
(in secondary battery with non-aqueous **electrolyte**)  
IT Sulfonic acids, uses  
(salts; in non-aqueous **electrolyte** for secondary battery)  
IT Battery anodes  
Battery cathodes  
Battery **electrolytes**  
Secondary batteries  
(secondary battery with non-aqueous **electrolyte**)  
IT Polyamide fibers, uses

- Vinal fibers  
(separator; in secondary battery with non-aqueous **electrolyte**)
- IT Aluminum alloy, base  
(current collector; in secondary battery with non-aqueous **electrolyte**)
- IT 12031-95-7, Lithium titanate ( $\text{Li}_4\text{Ti}_5\text{O}_{12}$ )  
(anode containing; in secondary battery with non-aqueous **electrolyte**)
- IT 11113-67-0, Iron lithium oxide 39302-37-9, Lithium titanium oxide 39457-42-6, Lithium manganese oxide 52627-24-4, Cobalt lithium oxide 104708-77-2, Copper lithium oxide  
(cathode containing; in secondary battery with non-aqueous **electrolyte**)
- IT 7439-95-4, Magnesium, uses 7440-24-6, Strontium, uses 7440-64-4, Ytterbium, uses 7440-65-5, Yttrium, uses 7440-70-2, Calcium, uses  
(cathode containing; in secondary battery with non-aqueous **electrolyte**)
- IT 131344-56-4P, Cobalt lithium nickel oxide 182442-95-1P, Cobalt lithium manganese nickel oxide  
(cathode containing; in secondary battery with non-aqueous **electrolyte**)
- IT 7429-90-5, Aluminum, uses  
(current collector, cathode containing; in secondary battery with non-aqueous **electrolyte**)
- IT 7440-50-8, Copper, uses  
(current collector; in secondary battery with non-aqueous **electrolyte**)
- IT 78-40-0, Triethyl phosphate 96-48-0 96-49-1, Ethylene carbonate 96-49-1D, Ethylene carbonate, fluorinated 105-58-8, Diethyl carbonate 108-29-2 108-32-7, Propylene carbonate 111-32-0 126-33-0, Sulpholane 512-56-1, Trimethyl phosphate 623-53-0, Ethyl methyl carbonate 35466-86-5 114435-02-8, Fluoroethylene carbonate 174899-82-2 268536-05-6  
(**electrolyte** containing; in secondary battery with non-aqueous **electrolyte**)
- IT 14283-07-9 21324-40-3, Lithium hexafluorophosphate ( $\text{LiPF}_6$ )  
(**electrolyte**; in secondary battery with non-aqueous **electrolyte**)
- IT 14798-03-9, Ammonium, uses 16749-13-6, Phosphonium 16969-45-2, Pyridinium 17009-90-4, Imidazolium 25215-10-5, Guanidinium 55526-39-1, Pyrrolidinium  
(**electrolyte**; secondary battery with non-aqueous **electrolyte**)
- IT 334-48-5, Decanoic acid 11129-12-7, Borate 14265-44-2, Phosphate, uses 14808-79-8, Sulfate, uses 17655-31-1, Amide 39349-74-1, Antimonate 58207-38-8  
(in non-aqueous **electrolyte** for secondary battery)
- IT 147098-72-4, Cobalt nickel hydroxide ( $\text{Co}_{0.5}\text{Ni}_{0.5}(\text{OH})_2$ ) 602297-52-9, Cobalt manganese nickel hydroxide ( $\text{Co}_{0.33}\text{Mn}_{0.33}\text{Ni}_{0.33}(\text{OH})_2$ )  
(in preparation of cathode material for secondary battery with non-aqueous **electrolyte**)
- IT 9003-07-0, Polypropylene  
(in secondary battery with non-aqueous **electrolyte**)
- IT 9002-88-4, Polyethylene 25038-59-9, uses 26062-94-2, Polybutylene terephthalate  
(separator; in secondary battery with non-aqueous

**electrolyte)**

L41 ANSWER 5 OF 25 HCAPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2005:155490 HCAPLUS  
 DOCUMENT NUMBER: 142:264348  
 TITLE: **Electrolyte** for rechargeable lithium battery  
 INVENTOR(S): Lee, Yong-Beom; Song, Eui-Hwan; Kim, Kwang-Sup; Earmme, Tae-Shik; Kim, You-Mee  
 PATENT ASSIGNEE(S): Samsung SDI Co., Ltd., S. Korea  
 SOURCE: Eur. Pat. Appl., 32 pp.  
 CODEN: EPXXDW  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1508934	A1	<u>20050223</u>	EP 2004-90320	2004 0819
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK, HR				
JP 2005072003	A2	20050317	JP 2004-241017	2004 0820
US 2005084765	A1	20050421	US <u>2004-924248</u>	2004 0820
PRIORITY APPLN. INFO.:				2003 0820
KR 2003-57716				A
KR 2004-5874				A
				2004 0129

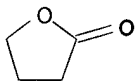
OTHER SOURCE(S): MARPAT 142:264348

AB Disclosed is an **electrolyte** for a rechargeable lithium battery, including a mixture of organic solvents including a cyclic solvent and a nitrile-based solvent represented by the formula R-C.tplbond.N (R is from C1-10 aliphatic hydrocarbons, C1-10 halogenated aliphatic hydrocarbons, C6-10 aromatic hydrocarbons, and C6-10 halogenated aromatic hydrocarbons) and a lithium salt.

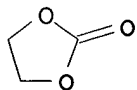
IT 96-48-0,  $\gamma$ -Butyrolactone 96-49-1, Ethylene carbonate 623-96-1, Dipropyl carbonate 33454-82-9, Lithium triflate 90076-65-6  
 (**electrolyte** for rechargeable lithium battery)

RN 96-48-0 HCAPLUS

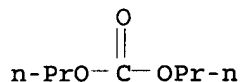
CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



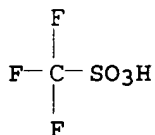
RN 96-49-1 HCAPLUS  
 CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



RN 623-96-1 HCAPLUS  
 CN Carbonic acid, dipropyl ester (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

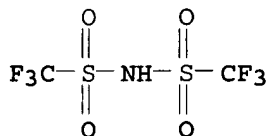


RN 33454-82-9 HCAPLUS  
 CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



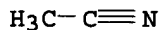
● Li

RN 90076-65-6 HCAPLUS  
 CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl) sulfonyl] -, lithium salt (9CI) (CA INDEX NAME)

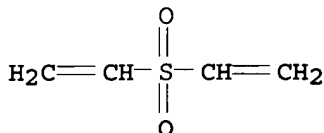


● Li

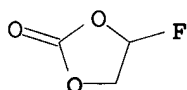
IT 75-05-8, Acetonitrile, uses 77-77-0, DiVinyl sulfone 114435-02-8, Fluoroethylene carbonate (electrolyte for rechargeable lithium battery)  
 RN 75-05-8 HCAPLUS  
 CN Acetonitrile (8CI, 9CI) (CA INDEX NAME)



RN 77-77-0 HCAPLUS  
 CN Ethene, 1,1'-sulfonylbis- (9CI) (CA INDEX NAME)



RN 114435-02-8 HCAPLUS  
 CN 1,3-Dioxolan-2-one, 4-fluoro- (9CI) (CA INDEX NAME)



IC ICM H01M010-40  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 Section cross-reference(s): 38  
 ST **electrolyte** rechargeable lithium battery  
 IT Nitriles, uses  
     (aliphatic, C1-10; **electrolyte** for rechargeable lithium battery)  
 IT Nitriles, uses  
     (aromatic, C6-10; **electrolyte** for rechargeable lithium battery)  
 IT Battery **electrolytes**  
     (**electrolyte** for rechargeable lithium battery)  
 IT Lactones  
     (**electrolyte** for rechargeable lithium battery)  
 IT Secondary batteries  
     (lithium; **electrolyte** for rechargeable lithium battery)  
 IT Peroxides, uses  
     (organic; **electrolyte** for rechargeable lithium battery)  
 IT 94-36-0, Dibenzoyl peroxide, processes 105-74-8, Dilauroyl peroxide 107-71-1, tert-Butylperoxy acetate 109-13-7, tert-Butylperoxyisobutyrate 110-22-5, Diacetyl peroxide 614-45-9, tert-Butylperoxy benzoate 686-31-7, tert-Amylperoxy 2-ethylhexanoate 927-07-1, tert-Butyl peroxy pivalate 2372-21-6, tert-Butyl peroxy isopropyl carbonate 3006-82-4, tert-Butyl peroxy-2-ethyl hexanoate 3851-87-4, Bis(3,5,5-trimethyl)hexanoyl peroxide 4419-11-8, 2,2'-Azobis(2,4-dimethylvaleronitrile) 13122-18-4, tert-Butylperoxy 3,5,5-trimethylhexanoate 15518-51-1, Diethylene glycol bis(tert-butylperoxycarbonate) 15520-11-3, Di(4-tert-butylcyclohexyl)peroxydicarbonate 25551-14-8, 26748-38-9, tert-Butyl peroxy neoheptanoate 26748-41-4, tert-Butyl peroxy neodecanoate 29240-17-3, tert-Amyl peroxy pivalate 34443-12-4, tert-Butyl peroxy 2-ethylhexyl carbonate 36536-42-2, 1,6-Hexanediol bis(tert-butyl peroxycarbonate) 51240-95-0, 1,1,3,3-Tetramethylbutyl peroxy neodecanoate 51938-28-4, tert-Hexylperoxy pivalate 52238-68-3, Bis(3-methoxybutyl) peroxydicarbonate 68860-54-8 96989-15-0 845717-44-4

(electrolyte for rechargeable lithium battery)

IT 79-20-9, Methyl acetate 96-48-0,  $\gamma$ -Butyrolactone  
 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate  
 106-70-7, Methyl hexanoate 107-12-0, Propionitrile 107-31-3,  
 Methyl formate 108-29-2,  $\gamma$ -Valerolactone 108-32-7,  
 Propylene carbonate 109-74-0, Butyronitrile 110-59-8,  
 Valeronitrile 124-12-9, Caprylonitrile 140-29-4,  
 Phenylacetoneitrile 141-78-6, Ethyl acetate, uses 326-62-5,  
 2-Fluorophenylacetoneitrile 394-47-8, 2-Fluorobenzonitrile  
 459-22-3, 4-Fluorophenylacetoneitrile 502-44-3,  
 $\epsilon$ -Caprolactone 542-28-9,  $\delta$ -Valerolactone  
 542-52-9, Dibutyl carbonate 616-38-6, Dimethyl carbonate  
 623-53-0, Ethyl methyl carbonate 623-96-1, Dipropyl  
 carbonate 629-08-3, Heptanenitrile 630-18-2, tert-Butyl  
 cyanide 695-06-7,  $\gamma$ -Caprolactone 766-05-2,  
 Cyclohexanecarbonitrile 1194-02-1, 4-Fluorobenzonitrile  
 4254-02-8, Cyclopentanecarbonitrile 4437-85-8, Butylene  
 carbonate 7439-93-2D, Lithium, salt 7791-03-9, Lithium  
 perchlorate 12190-79-3, Cobalt lithium oxide (CoLiO<sub>2</sub>)  
 14024-11-4, Lithium tetrachloroaluminate 14283-07-9, Lithium  
 tetrafluoroborate 18424-17-4, Lithium hexafluoroantimonate  
 21324-40-3, Lithium hexafluorophosphate 29935-35-1, Lithium  
 hexafluoroarsenate 33454-82-9, Lithium triflate  
 57381-51-8, 4-Chloro-2-fluoro-benzonitrile 60702-69-4,  
 2-Chloro-4-fluoro-benzonitrile 90076-65-6 90240-74-7  
 127813-79-0 132843-44-8 179802-95-0, Cobalt lithium manganese  
 nickel oxide (Co<sub>0.1</sub>LiMn<sub>0.1</sub>Ni<sub>0.8</sub>O<sub>2</sub>) 845717-45-5

(electrolyte for rechargeable lithium battery)

IT 75-05-8, Acetonitrile, uses 77-77-0, DiVinyl  
 sulfone 105-64-6, Di-isopropylperoxydicarbonate 628-73-9,  
 Capronitrile 872-36-6, Vinylene carbonate 3741-38-6, Ethylene  
 sulfite 16111-62-9, Bis(2-ethylhexyl) peroxydicarbonate  
 22537-94-6 71331-99-2, Bis(4-tert-butylcyclohexyl)peroxycarbonat  
 e 114435-02-8, Fluoroethylene carbonate

(electrolyte for rechargeable lithium battery)

REFERENCE COUNT: 18 THERE ARE 18 CITED REFERENCES AVAILABLE  
 FOR THIS RECORD. ALL CITATIONS AVAILABLE  
 IN THE RE FORMAT

L41 ANSWER 6 OF 25 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:999582 HCAPLUS  
 DOCUMENT NUMBER: 141:426305  
 TITLE: Nonaqueous electrolyte for a lithium  
 secondary battery  
 INVENTOR(S): Noh, Hyung-Gon  
 PATENT ASSIGNEE(S): S. Korea  
 SOURCE: U.S. Pat. Appl. Publ., 13 pp.  
 CODEN: USXXCO  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2004229128	A1	<u>20041118</u>	US 2004-834668	<u>2004</u> 0428
JP 2004342585	A2	20041202	JP 2004-17904	



2004  
0127

CN 1551401

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20041201

CN 2004-10045142

2004  
0428

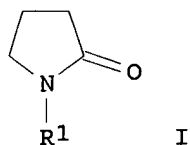
PRIORITY APPLN. INFO.:

KR 2003-30380

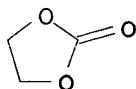
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2003  
0513OTHER SOURCE(S):  
GI

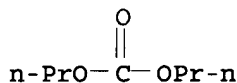
MARPAT 141:426305



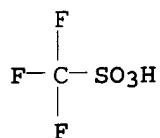
- AB Disclosed is an **electrolyte** of a lithium secondary battery comprising a lithium salt, an organic solvent, and at least one additive compound selected from the group consisting of compds. represented by the formula (I) and derivs. thereof: where R1 is selected from the group consisting of hydrogen radicals, alkyls aryls, cycloalkyls, alkenyls, alkynyls, ester radicals, and aliphatic carbonate radicals. The **electrolyte** improves both swelling inhibition properties at high temperature and capacity characteristics of a lithium secondary battery.
- IT 96-49-1, Ethylene carbonate 623-96-1, Dipropyl carbonate 33454-82-9, Lithium triflate 90076-65-6 131651-65-5, Lithium nonafluorobutanesulfonate (nonaq. **electrolyte** for lithium secondary battery)
- RN 96-49-1 HCAPLUS
- CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



- RN 623-96-1 HCAPLUS
- CN Carbonic acid, dipropyl ester (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



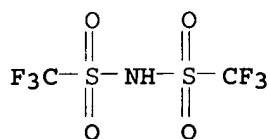
- RN 33454-82-9 HCAPLUS
- CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 90076-65-6 HCAPLUS

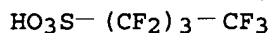
CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (9CI) (CA INDEX NAME)



● Li

RN 131651-65-5 HCAPLUS

CN 1-Butanesulfonic acid, 1,1,2,2,3,3,4,4,4-nonafluoro-, lithium salt (9CI) (CA INDEX NAME)



● Li

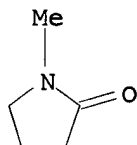
IT 872-50-4, 1-Methyl-2-pyrrolidone, uses 114435-02-8

, Fluoroethylene carbonate

(nonaq. **electrolyte** for lithium secondary battery)

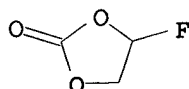
RN 872-50-4 HCAPLUS

CN 2-Pyrrolidinone, 1-methyl- (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 114435-02-8 HCAPLUS

CN 1,3-Dioxolan-2-one, 4-fluoro- (9CI) (CA INDEX NAME)



IC ICM H01M010-40  
ICS H01M004-52; H01M004-50; H01M004-58

INCL 429328000; 429330000; 429231100; 429223000; 429224000; 429231950

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
Section cross-reference(s): 38

ST **electrolyte** nonaq lithium secondary battery

IT Swelling, physical  
(inhibition; nonaq. **electrolyte** for lithium secondary battery)

IT Secondary batteries  
(lithium; nonaq. **electrolyte** for lithium secondary battery)

IT Battery **electrolytes**  
(nonaq. **electrolyte** for lithium secondary battery)

IT Aromatic hydrocarbons, uses  
Esters, uses  
Ethers, uses  
Ketones, uses  
(nonaq. **electrolyte** for lithium secondary battery)

IT 71-43-2, Benzene, uses **96-49-1**, Ethylene carbonate  
105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate  
108-88-3, Toluene, uses 462-06-6, Fluorobenzene 463-79-6D,  
Carbonic acid, ester 616-38-6, Dimethyl carbonate 623-53-0,  
Methylethyl carbonate **623-96-1**, Dipropyl carbonate  
1330-20-7, Xylene, uses 4437-85-8, Butylene carbonate  
7791-03-9, Lithium perchlorate 12355-58-7 14024-11-4, Lithium  
tetrachloroaluminate 14283-07-9, Lithium tetrafluoroborate  
18424-17-4, Lithium hexafluoroantimonate 21324-40-3, Lithium  
hexafluorophosphate 27359-10-0, Trifluorotoluene 29935-35-1,  
Lithium hexafluoroarsenate **33454-82-9**, Lithium triflate  
35363-40-7, Ethyl propyl carbonate 56525-42-9, Methyl propyl  
carbonate **90076-65-6** **131651-65-5**, Lithium  
nonafluorobutanesulfonate  
(nonaq. **electrolyte** for lithium secondary battery)

IT 88-12-0, 1-Vinyl-2-pyrrolidone, uses 872-36-6, Vinylene carbonate  
872-36-6D, Vinylene carbonate, derivative **872-50-4**,  
1-Methyl-2-pyrrolidone, uses 2687-91-4, 1-Ethyl-2-pyrrolidone  
4641-57-0, 1-Phenyl-2-pyrrolidone 7439-93-2, Lithium, uses  
12190-79-3, Cobalt lithium oxide (CoLiO<sub>2</sub>) **114435-02-8**,  
Fluoroethylene carbonate 162684-16-4, Lithium manganese nickel  
oxide  
(nonaq. **electrolyte** for lithium secondary battery)

L41 ANSWER 7 OF 25 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:803862 HCAPLUS

DOCUMENT NUMBER: 141:298765

TITLE: Method for manufacture of cathode for  
nonaqueous **electrolyte** secondary  
battery

INVENTOR(S): Itaya, Masaharu; Miyake, Masahide; Fujimoto,  
Masahisa

PATENT ASSIGNEE(S): Sanyo Electric Co., Ltd., Japan

SOURCE: U.S. Pat. Appl. Publ., 67 pp.  
CODEN: USXXCO

DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO. -----	KIND ----	DATE -----	APPLICATION NO. -----	DATE
US 2004191629	A1	<u>20040930</u>	US 2004-807148	2004 0324
JP 2004296189	A2	20041021	JP 2003-85138	2003 0326
JP 2005190978	A2	20050714	JP 2004-73577	2004 0315
CN 1534822	A	20041006	CN 2004-10032318	2004 0326
PRIORITY APPLN. INFO.:			JP 2003-85138	A 2003 0326
			JP 2003-89077	A 2003 0327
			JP 2003-405837	A 2003 1204
			JP 2004-73577	A 2004 0315

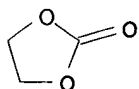
AB A non-aqueous **electrolyte** secondary battery comprises a pos. electrode including elemental sulfur, a neg. electrode including silicon that stores lithium, and a non-aqueous **electrolyte** including a room temperature molten salt having a m.p. of not higher than 60°. The non-aqueous **electrolyte** may further include at least one type of solvent selected from cyclic ether, chain ether, and fluorinated carbonate. The non-aqueous **electrolyte** may include a reduction product of elemental sulfur. The pos. electrode has a pos. electrode active material made of a mixture of elemental sulfur, a conductive agent, and a binder. The electrode having a pos. electrode active material is processed under reduced-pressure while immersed in the non-aqueous **electrolyte**. A pressure during the reduced-pressure process is preferably not higher than 28000 Pa (-55 cm Hg with respect to atmospheric pressure).

IT 96-49-1, Ethylene carbonate 90076-65-6  
 548478-05-3

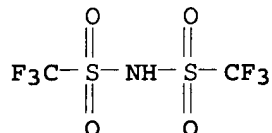
(method for manufacture of cathode for nonaq. **electrolyte** secondary battery)

RN 96-49-1 HCAPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)

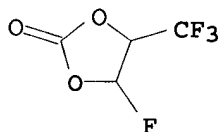


RN 90076-65-6 HCAPLUS  
 CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-  
 , lithium salt (9CI) (CA INDEX NAME)



● Li

RN 548478-05-3 HCAPLUS  
 CN 1,3-Dioxolan-2-one, 4-fluoro-5-(trifluoromethyl)- (9CI) (CA INDEX NAME)



IC ICM H01M004-58  
 ICS H01M010-40  
 INCL 429231950; 429218100; 429220000; 429329000; 429337000; 429330000;  
 429338000  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 ST cathode manuf nonaq **electrolyte** secondary battery  
 IT Ethers, uses  
 (cyclic; method for manufacture of cathode for nonaq.  
**electrolyte** secondary battery)  
 IT Battery cathodes  
 Secondary batteries  
 (method for manufacture of cathode for nonaq. **electrolyte**  
 secondary battery)  
 IT Carbonaceous materials (technological products)  
 Ethers, uses  
 Quaternary ammonium compounds, uses  
 (method for manufacture of cathode for nonaq. **electrolyte**  
 secondary battery)  
 IT 7439-93-2, Lithium, uses  
 (method for manufacture of cathode for nonaq. **electrolyte**  
 secondary battery)  
 IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate  
 109-99-9, Thf, uses 110-71-4, 1,2-Dimethoxyethane 463-79-6D,  
 Carbonic acid, ester, fluorinated 646-06-0, 1,3-Dioxolane  
 7440-21-3, Silicon, uses 7704-34-9, Sulfur, uses 21324-40-3,  
 Lithium hexafluorophosphate 90076-65-6 167951-80-6

210230-43-6, Trimethylhexylammonium bis(trifluoromethylsulfonyl)imide 268536-05-6, Trimethylpropylammonium bis(trifluoromethylsulfonyl)imide 497220-96-9, Triethylmethylammonium 2,2,2-trifluoro-N-(trifluoromethylsulfonyl)acetamide **548478-05-3**  
(method for manufacture of cathode for nonaq. electrolyte secondary battery)

L41 ANSWER 8 OF 25 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:796490 HCAPLUS

DOCUMENT NUMBER: 141:263480

TITLE: A nonaqueous **electrolyte** for a lithium secondary battery

INVENTOR(S): Noh, Hyeong-Gon; Jung, Cheol-Soo; Song, Eui-Hwan

PATENT ASSIGNEE(S): Samsung SDI Co., Ltd., S. Korea

SOURCE: Eur. Pat. Appl., 25 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1463143	A2	20040929	EP 2003-90265	2003 0821
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
JP 2005108440	A2	20050421	JP 2003-183257	2003 0626
CN 1532986	A	20040929	CN 2003-155677	2003 0902
US 2004197667	A1	20041007	US 2003-653192	2003 0903
PRIORITY APPLN. INFO.:			KR 2003-18226	A 2003 0324

OTHER SOURCE(S): MARPAT 141:263480

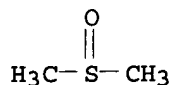
AB An **electrolyte** of a lithium secondary battery includes lithium salts, an organic solvent with a high b.p., and a carbonate-based additive compound having substituents selected from the group consisting of a halogen, a CN, and a NO<sub>2</sub>. The **electrolyte** improves discharge, low temperature, and cycle life characteristics of a lithium secondary battery.

IT 67-68-5, DmsO, uses 68-12-2, Dmf, uses 75-05-8, Acetonitrile, uses 79-16-3, N-Methylacetamide 96-48-0,  $\gamma$ -Butyrolactone 96-49-1, Ethylene carbonate 123-39-7, n-Methylformamide 126-33-0, Sulfolane 616-42-2, Dimethyl sulfite 623-96-1, Dipropyl carbonate 872-50-4, N-Methylpyrrolidone, uses 33454-82-9, Lithium triflate 90076-65-6 131651-65-5

(nonaq. **electrolyte** for lithium secondary battery)

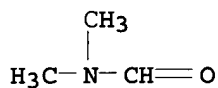
RN 67-68-5 HCAPLUS

CN Methane, sulfinylbis- (9CI) (CA INDEX NAME)



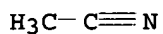
RN 68-12-2 HCAPLUS

CN Formamide, N,N-dimethyl- (8CI, 9CI) (CA INDEX NAME)



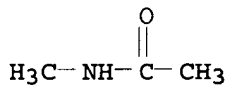
RN 75-05-8 HCAPLUS

CN Acetonitrile (8CI, 9CI) (CA INDEX NAME)



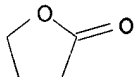
RN 79-16-3 HCAPLUS

CN Acetamide, N-methyl- (8CI, 9CI) (CA INDEX NAME)



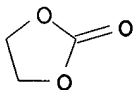
RN 96-48-0 HCAPLUS

CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



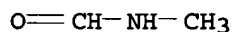
RN 96-49-1 HCAPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)

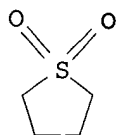


RN 123-39-7 HCAPLUS

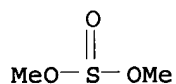
CN Formamide, N-methyl- (8CI, 9CI) (CA INDEX NAME)



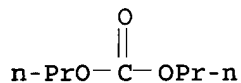
RN 126-33-0 HCAPLUS  
 CN Thiophene, tetrahydro-, 1,1-dioxide (8CI, 9CI) (CA INDEX NAME)



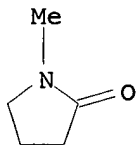
RN 616-42-2 HCAPLUS  
 CN Sulfurous acid, dimethyl ester (8CI, 9CI) (CA INDEX NAME)



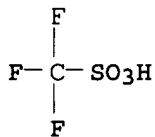
RN 623-96-1 HCAPLUS  
 CN Carbonic acid, dipropyl ester (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 872-50-4 HCAPLUS  
 CN 2-Pyrrolidinone, 1-methyl- (7CI, 8CI, 9CI) (CA INDEX NAME)



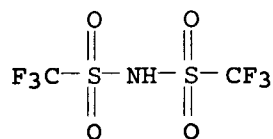
RN 33454-82-9 HCAPLUS  
 CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

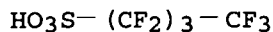
RN 90076-65-6 HCAPLUS  
 CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (9CI) (CA INDEX NAME)





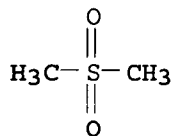
● Li

RN 131651-65-5 HCAPLUS  
 CN 1-Butanesulfonic acid, 1,1,2,2,3,3,4,4,4-nonafluoro-, lithium salt  
 (9CI) (CA INDEX NAME)

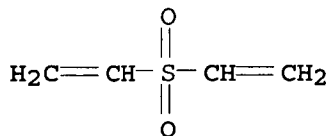


● Li

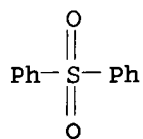
IT 67-71-0, Methyl sulfone 77-77-0, Vinyl sulfone  
 127-63-9, Phenyl sulfone 620-32-6, Benzyl  
 sulfone 1120-71-4, Propane sultone 1889-59-4,  
 Ethyl vinyl sulfone 3680-02-2, Methyl vinyl sulfone  
 5535-48-8, Phenyl vinyl sulfone 28452-93-9,  
 Butadiene sulfone 114435-02-8, Fluoroethylene carbonate  
 756901-22-1 756901-23-2  
 (nonaq. electrolyte for lithium secondary battery)  
 RN 67-71-0 HCAPLUS  
 CN Methane, sulfonylbis- (9CI) (CA INDEX NAME)



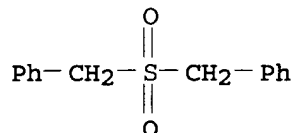
RN 77-77-0 HCAPLUS  
 CN Ethene, 1,1'-sulfonylbis- (9CI) (CA INDEX NAME)



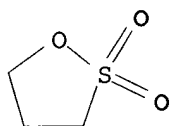
RN 127-63-9 HCAPLUS  
 CN Benzene, 1,1'-sulfonylbis- (9CI) (CA INDEX NAME)



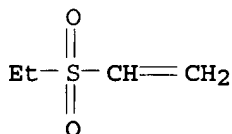
RN 620-32-6 HCAPLUS  
CN Benzene, 1,1'-[sulfonylbis(methylene)]bis- (9CI) (CA INDEX NAME)



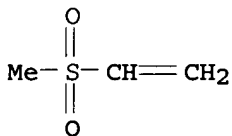
RN 1120-71-4 HCAPLUS  
CN 1,2-Oxathiolane, 2,2-dioxide (8CI, 9CI) (CA INDEX NAME)



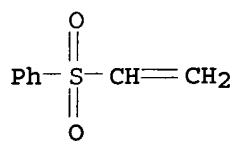
RN 1889-59-4 HCAPLUS  
CN Ethene, (ethylsulfonyl)- (9CI) (CA INDEX NAME)



RN 3680-02-2 HCAPLUS  
CN Ethene, (methylsulfonyl)- (9CI) (CA INDEX NAME)



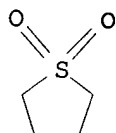
RN 5535-48-8 HCAPLUS  
CN Benzene, (ethenylsulfonyl)- (9CI) (CA INDEX NAME)



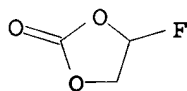
RN 28452-93-9 HCAPLUS  
CN Thiophene, dihydro-, 1,1-dioxide (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

CM 1

CRN 126-33-0  
CMF C4 H8 O2 S



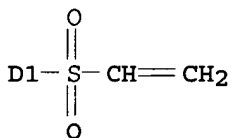
RN 114435-02-8 HCAPLUS  
CN 1,3-Dioxolan-2-one, 4-fluoro- (9CI) (CA INDEX NAME)



RN 756901-22-1 HCAPLUS  
CN Benzene, chloro(ethenylsulfonyl)- (9CI) (CA INDEX NAME)



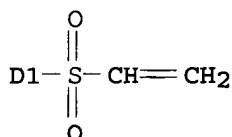
D1- C1



RN 756901-23-2 HCAPLUS  
CN Benzene, (ethenylsulfonyl)fluoro- (9CI) (CA INDEX NAME)



D1-F



- IC ICM H01M010-40  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 ST nonaq **electrolyte** lithium secondary battery  
 IT Secondary batteries  
     (lithium; nonaq. **electrolyte** for lithium secondary battery)  
 IT Battery **electrolytes**  
     (nonaq. **electrolyte** for lithium secondary battery)  
 IT Anhydrides  
     Aromatic hydrocarbons, uses  
         (nonaq. **electrolyte** for lithium secondary battery)  
 IT Fluoropolymers, uses  
     (nonaq. **electrolyte** for lithium secondary battery)  
 IT Styrene-butadiene rubber, uses  
     (nonaq. **electrolyte** for lithium secondary battery)  
 IT 67-68-5, DmsO, uses 68-12-2, Dmf, uses  
     71-43-2, Benzene, uses 75-05-8, Acetonitrile, uses  
     79-16-3, N-Methylacetamide 96-48-0,  
     γ-Butyrolactone 96-49-1, Ethylene carbonate  
     105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate  
     108-88-3, Toluene, uses 123-39-7, n-Methylformamide  
     126-33-0, Sulfolane 462-06-6, Fluorobenzene 616-38-6,  
     Dimethyl carbonate 616-42-2, Dimethyl sulfite  
     623-53-0, Methyl ethyl carbonate 623-96-1, Dipropyl  
     carbonate 872-50-4, N-Methylpyrrolidone, uses  
     1330-20-7, Xylene, uses 4437-85-8, Butylene carbonate  
     7447-41-8, Lithium chloride, uses 7782-42-5, Graphite, uses  
     7791-03-9, Lithium perchlorate 10377-51-2, Lithium iodide  
     12003-67-7 14024-11-4, Lithium tetrachloroaluminate  
     14283-07-9, Lithium tetrafluoroborate 18424-17-4, Lithium  
     hexafluoroantimonate 21324-40-3, Lithium hexafluorophosphate  
     25496-08-6, Fluorotoluene 27359-10-0, TriFluorotoluene  
     29935-35-1, Lithium hexafluoroarsenate 33454-82-9,  
     Lithium triflate 35363-40-7, Ethyl propyl carbonate  
     56525-42-9, Methyl propyl carbonate 90076-65-6  
     131651-65-5 162684-16-4, Lithium manganese nickel oxide  
         (nonaq. **electrolyte** for lithium secondary battery)  
 IT 67-71-0, Methyl sulfone 77-77-0, Vinyl sulfone  
     80-05-7, uses 104-92-7, 4-Bromoanisole 127-63-9,  
     Phenyl sulfone 452-10-8, 2,4-Difluoroanisole 456-49-5,  
     3-Fluoroanisole 459-60-9, 4-Fluoroanisole 463-79-6D, Carbonic  
     acid, cyclic ester 620-32-6, Benzyl sulfone 623-12-1,

4-Chloroanisole 1073-05-8, 1,3-Propanediol cyclic sulfate  
 1120-71-4, Propane sultone 1888-91-1,  
 n-Acetylcaprolactam 1889-59-4, Ethyl vinyl sulfone  
 2398-37-0, 3-Bromoanisole 2845-89-8, 3-Chloroanisole  
 3680-02-2, Methyl vinyl sulfone 5535-48-8,  
 Phenyl vinyl sulfone 24937-79-9, PvdF 28452-93-9,  
 Butadiene sulfone 28802-49-5, Dimethylfuran 93343-10-3,  
 3,5-Difluoroanisole 114435-02-8, Fluoroethylene  
 carbonate 202925-08-4, 3-Chloro-5-fluoroanisole  
 756901-22-1 756901-23-2

(nonaq. **electrolyte** for lithium secondary battery)

IT 9003-55-8

(styrene-butadiene rubber; nonaq. **electrolyte** for  
 lithium secondary battery)

L41 ANSWER 9 OF 25 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:570455 HCAPLUS

DOCUMENT NUMBER: 141:91879

TITLE: Method of preparation of **electrolyte**  
 for nonaqueous battery

INVENTOR(S): Itaya, Masaharu; Miyake, Masahide; Fujimoto,  
 Masahisa; Koga, Hideyuki; Donoue, Kazunori

PATENT ASSIGNEE(S): Japan

SOURCE: U.S. Pat. Appl. Publ., 7 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO. -----	KIND ----	DATE -----	APPLICATION NO. -----	DATE
US 2004137324	A1	20040715	US 2003-743746	2003 1224
JP 2004213991	A2	20040729	JP 2002-381184	2002 1227
JP 2004265677	A2	20040924	JP 2003-53549	2003 0228
PRIORITY APPLN. INFO.:			JP 2002-381184	A 2002 1227
			JP 2003-53549	A 2003 0228

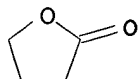
AB An **electrolyte** for a nonaq. battery according to the  
 present invention consists essentially of magnesium  
 bistrifluoromethanesulfonimide. An **electrolytic** solution  
 for a nonaq. battery according to the present invention includes  
 the magnesium bistrifluoromethanesulfonimide, and an organic solvent  
 such as a cyclic carbonate, a chain carbonate, a cyclic ether and  
 a chain ether or an ordinary temperature molten salt having a m.p. of  
 60° or less in which the magnesium  
 bistrifluoromethanesulfonimide is dissolved.

IT 96-48-0,  $\gamma$ -Butyrolactone 96-49-1, Ethylene

carbonate 126-33-0, Sulfolane 114435-02-8,  
FluoroEthylene carbonate  
(method of preparation of **electrolyte** for nonaq. battery)

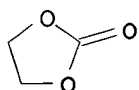
RN 96-48-0 HCAPLUS

CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



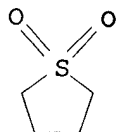
RN 96-49-1 HCAPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



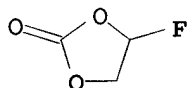
RN 126-33-0 HCAPLUS

CN Thiophene, tetrahydro-, 1,1-dioxide (8CI, 9CI) (CA INDEX NAME)



RN 114435-02-8 HCAPLUS

CN 1,3-Dioxolan-2-one, 4-fluoro- (9CI) (CA INDEX NAME)



IC ICM H01M010-40

INCL 429188000; 429330000; 429338000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST **electrolyte** prepn nonaq magnesium ion battery

IT Esters, uses

Ethers, uses

(chain; method of preparation of **electrolyte** for nonaq. battery)

IT Ethers, uses

(cyclic; method of preparation of **electrolyte** for nonaq. battery)

IT Hydrocarbons, uses

(fluoro; method of preparation of **electrolyte** for nonaq. battery)

IT Secondary batteries

(magnesium ion; method of preparation of **electrolyte** for nonaq. battery)

IT Battery **electrolytes**

(method of preparation of **electrolyte** for nonaq. battery)

IT Crown ethers  
Lactones  
Transition metal sulfides  
(method of preparation of **electrolyte** for nonaq. battery)

IT Imides  
(method of preparation of **electrolyte** for nonaq. battery)

IT Sulfonic acids, uses  
(salts; method of preparation of **electrolyte** for nonaq. battery)

IT Imides  
Sulfonic acids, uses  
(sulfonimides, alkyl; method of preparation of **electrolyte** for nonaq. battery)

IT Magnesium alloy, base  
(method of preparation of **electrolyte** for nonaq. battery)

IT 79-20-9, Methyl acetate 96-48-0,  $\gamma$ -Butyrolactone  
96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate  
107-31-3, Methyl formate 108-29-2 108-32-7, Propylene  
carbonate 109-99-9, Thf, uses 110-71-4 126-33-0,  
Sulfolane 463-79-6D, Carbonic acid, ester, chain 463-79-6D,  
Carbonic acid, ester, cyclic 554-12-1, Methyl propionate  
616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate  
1309-48-4, Magnesium oxide, uses 1333-38-6, Angelica lactone  
7439-95-4, Magnesium, uses 7440-21-3, Silicon, uses  
22251-34-9, Ethoxymethoxymethane 51311-17-2, Carbon fluoride  
60871-83-2, Magnesium triflate 73506-93-1, Diethoxyethane  
114435-02-8, FluoroEthylene carbonate 133395-16-1  
268536-05-6, Trimethylpropylammonium-bis-  
(trifluoromethylsulfonyl)imide  
(method of preparation of **electrolyte** for nonaq. battery)

IT 546-93-0, Magnesium carbonate 1309-42-8, Magnesium hydroxide  
(method of preparation of **electrolyte** for nonaq. battery)

L41 ANSWER 10 OF 25 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:442665 HCAPLUS

DOCUMENT NUMBER: 141:15941

TITLE: Electrochemically stable onium salts and  
**electrolytes** containing such for  
electrochemical capacitors

INVENTOR(S): Xu, Kang; Ding, Shengping; Jow, T. Richard

PATENT ASSIGNEE(S): The United States of America as Represented by  
the Secretary of the Army, USA

SOURCE: U.S., 13 pp.  
CODEN: USXXAM

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----
US 6743947	B1	20040601	US 1999-309393	1999 0510
US 2004222401	A1	20041111	US 2004-855646	2004 0528
PRIORITY APPLN. INFO.:			US 1999-309393	A3 1999

0510

OTHER SOURCE(S): MARPAT 141:15941

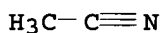
AB Based on the discovery that the m.p. and solubility of onium salts are affected by the asymmetry of the substitution on cation, and that the branched substituents effectively shield onium cations from electrochem. reduction, new onium salts were synthesized and high performance **electrolytes** based on these salts for electrochem. capacitor are provided. The composition of the new **electrolyte** comprises an onium salt or mixture of such onium salts dissolved in aprotic, nonaq. solvents or mixture of such solvents. The **electrolyte** is able to perform at high rate of charge/discharge, at low ambient temps., and within wide operating voltage, due to the high solubility, low melting temperature, and the improved reduction stability of the new onium cations, resp.

IT 75-05-8, Acetonitrile, uses 96-48-0,  $\gamma$ -Butyrolactone 96-49-1, Ethylene carbonate 126-33-0, Sulfolane 114435-02-8, Fluoroethylene carbonate 114435-06-2 171730-81-7 183301-46-4 183301-52-2

(electrochem. stable onium salts and **electrolytes** containing such for electrochem. capacitors with)

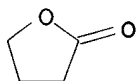
RN 75-05-8 HCAPLUS

CN Acetonitrile (8CI, 9CI) (CA INDEX NAME)



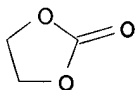
RN 96-48-0 HCAPLUS

CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



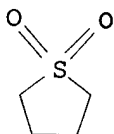
RN 96-49-1 HCAPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



RN 126-33-0 HCAPLUS

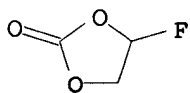
CN Thiophene, tetrahydro-, 1,1-dioxide (8CI, 9CI) (CA INDEX NAME)



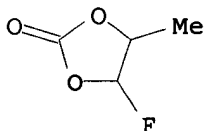
RN 114435-02-8 HCAPLUS

CN 1,3-Dioxolan-2-one, 4-fluoro- (9CI) (CA INDEX NAME)

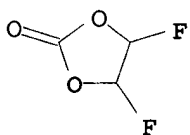




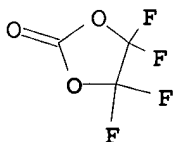
RN 114435-06-2 HCAPLUS  
 CN 1,3-Dioxolan-2-one, 4-fluoro-5-methyl- (9CI) (CA INDEX NAME)



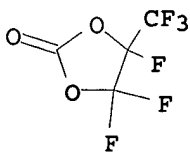
RN 171730-81-7 HCAPLUS  
 CN 1,3-Dioxolan-2-one, 4,5-difluoro- (9CI) (CA INDEX NAME)



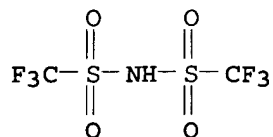
RN 183301-46-4 HCAPLUS  
 CN 1,3-Dioxolan-2-one, 4,4,5,5-tetrafluoro- (9CI) (CA INDEX NAME)



RN 183301-52-2 HCAPLUS  
 CN 1,3-Dioxolan-2-one, 4,4,5-trifluoro-5-(trifluoromethyl)- (9CI)  
 (CA INDEX NAME)

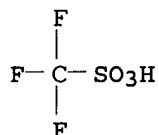


IT 90076-65-6, Lithium bis(trifluoromethane sulfonyl)imide  
 (in preparation of ethylmethyldi(isopropyl)ammonium  
 bis(trifluoromethanesulfonyl)imide)  
 RN 90076-65-6 HCAPLUS  
 CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-  
 , lithium salt (9CI) (CA INDEX NAME)



● Li

IT 33454-82-9P, Lithium triflate  
 (in preparation of ethylmethyldi(isopropyl)ammonium triflate)  
 RN 33454-82-9 HCAPLUS  
 CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA  
 INDEX NAME)



● Li

IC ICM C07D213-20  
 ICS C07C311-48; C07C211-63; C07C381-00; C07F009-02  
 INCL 564281000; 564282000; 564289000; 564082000; 546348000; 361327000;  
 568008000; 568074000  
 CC 76-10 (Electric Phenomena)  
 Section cross-reference(s): 22  
 ST onium salt prepn **electrolytic** capacitor  
 IT **Electrolytic** capacitors  
     **Electrolytic** solutions  
       (electrochem. stable onium salts and **electrolytes**  
       containing such for electrochem. capacitors)  
 IT Conducting polymers  
     (electrochem. stable onium salts and **electrolytes**  
     containing such for electrochem. capacitors with)  
 IT Aldehydes, uses  
   Carbides  
   Carbon black, uses  
   Nitrides  
   Phosphates, uses  
   Phosphites  
     (electrochem. stable onium salts and **electrolytes**  
     containing such for electrochem. capacitors with)  
 IT 7440-44-0, Activated carbon, uses  
     (activated; electrochem. stable onium salts and  
     **electrolytes** containing such for electrochem. capacitors  
     with)  
 IT 338729-28-5P  
     (electrochem. stable onium salts and **electrolytes**  
     containing such for electrochem. capacitors)  
 IT 75-05-8, Acetonitrile, uses 96-48-0,  
   γ-Butyrolactone 96-49-1, Ethylene carbonate

108-32-7, Propylene carbonate 111-69-3, Adiponitrile  
 126-33-0, Sulfolane 623-53-0, Ethyl methyl carbonate  
 4437-85-8, Butylene carbonate 51729-83-0, Methyl isopropyl  
 carbonate 114435-02-8, Fluoroethylene carbonate  
 114435-06-2 171730-81-7 183301-46-4  
 183301-52-2

(electrochem. stable onium salts and **electrolytes**  
 containing such for electrochem. capacitors with)

IT 90076-65-6, Lithium bis(trifluoromethane sulfonyl)imide  
 (in preparation of ethylmethyldi(isopropyl)ammonium  
 bis(trifluoromethanesulfonyl)imide)

IT 33454-82-9P, Lithium triflate  
 (in preparation of ethylmethyldi(isopropyl)ammonium triflate)

REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE  
 FOR THIS RECORD. ALL CITATIONS AVAILABLE  
 IN THE RE FORMAT

L41 ANSWER 11 OF 25 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:118572 HCAPLUS

DOCUMENT NUMBER: 140:149163

TITLE: Secondary batteries with nonaqueous  
**electrolytes**

INVENTOR(S): Saito, Midori; Komaru, Atsuo; Satori, Kotaro;  
 Inagaki, Naoko; Tanizaki, Hiroaki

PATENT ASSIGNEE(S): Sony Corp., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 32 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
JP 2004047131	A2	20040212	JP 2002-199068	

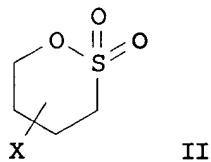
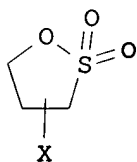
2002  
0708

PRIORITY APPLN. INFO.: JP 2002-199068

2002  
0708

OTHER SOURCE(S): MARPAT 140:149163

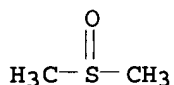
GI



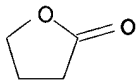
AB The battery comprises (A) a cathode, (B) an anode containing metals, alloys, elements, or their compds. that can form compds. with Li, and (C1) a nonaq. **electrolyte** containing  $\geq 1$  solvent(s) selected from a 1st solvent group, i.e. ethylene carbonate, fluoroethylene carbonate, propylene carbonate, butylene

carbonate,  $\gamma$ -Bu lactone, and ethylene sulfite and  $\geq 1$  solvent(s) selected from a 2nd solvent group, i.e. di-Me carbonate, Me Et carbonate, di-Et carbonate, Me Pr carbonate, di-Pr carbonate, diisopropyl carbonate, DMSO, and di-Et sulfoxide or (C2) a nonaq. **electrolyte** containing  $\geq 1$  oxathiolane-2,2-dioxides I and II (X = H, F, Cl, Br, Me, CH<sub>2</sub>F, CHF<sub>2</sub>, CF<sub>3</sub>). The batteries have high energy d. and show excellent charge-discharge cycles.

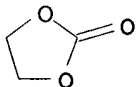
IT 67-68-5, Dimethyl sulfoxide, uses 96-48-0  
 96-49-1, Ethylene carbonate 623-96-1, Dipropyl carbonate 1120-71-4 114435-02-8,  
 Fluoroethylene carbonate  
 (nonaq. **electrolyte**; secondary lithium batteries with  
 nonaq. **electrolytes** with cyclic solvents and  
 noncyclic solvents)  
 RN 67-68-5 HCAPLUS  
 CN Methane, sulfinylbis- (9CI) (CA INDEX NAME)



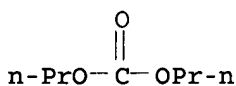
RN 96-48-0 HCAPLUS  
 CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



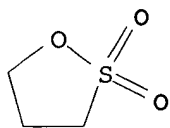
RN 96-49-1 HCAPLUS  
 CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



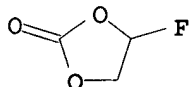
RN 623-96-1 HCAPLUS  
 CN Carbonic acid, dipropyl ester (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 1120-71-4 HCAPLUS  
 CN 1,2-Oxathiolane, 2,2-dioxide (8CI, 9CI) (CA INDEX NAME)



RN 114435-02-8 HCAPLUS  
 CN 1,3-Dioxolan-2-one, 4-fluoro- (9CI) (CA INDEX NAME)

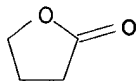


IC ICM H01M010-40  
 ICS H01M004-38  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 Section cross-reference(s): 27  
 ST secondary lithium battery nonaq **electrolyte**;  
 oxathiolanedioxide nonaq **electrolyte** secondary battery;  
 carbonate **electrolyte** nonaq secondary battery;  
 propionate lithium salt nonaq secondary battery  
 IT Secondary batteries  
 (lithium; secondary lithium batteries with nonaq.  
**electrolytes** with cyclic solvents and noncyclic  
 solvents)  
 IT Battery **electrolytes**  
 (nonaq.; secondary lithium batteries with nonaq.  
**electrolytes** with cyclic solvents and noncyclic  
 solvents)  
 IT 7440-21-3, Silicon, uses 7440-31-5, Tin, uses 259750-80-6  
 (anode; secondary lithium batteries with nonaq.  
**electrolytes** with cyclic solvents and noncyclic  
 solvents)  
 IT 12190-79-3, Cobalt lithium oxide (CoLiO<sub>2</sub>)  
 (cathode; secondary lithium batteries with nonaq.  
**electrolytes** with cyclic solvents and noncyclic  
 solvents)  
 IT 67-68-5, Dimethyl sulfoxide, uses 70-29-1, Diethyl  
 sulfoxide 96-48-0 96-49-1, Ethylene carbonate  
 105-37-3, Ethyl propionate 105-58-8, Diethyl carbonate  
 108-32-7, Propylene carbonate 554-12-1, Methyl propionate  
 616-38-6, Dimethyl carbonate 623-53-0, Methyl ethyl carbonate  
 623-96-1, Dipropyl carbonate 1120-71-4  
 1633-83-6 3741-38-6, Ethylene sulfite 4437-85-8, Butylene  
 carbonate 6482-34-4, Diisopropyl carbonate 14283-07-9, Lithium  
 tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate  
 56525-42-9, Methyl propyl carbonate 114435-02-8,  
 Fluoroethylene carbonate 652143-72-1 652143-73-2 652143-74-3  
 652143-75-4 652143-76-5 652143-77-6 652143-78-7  
 652143-79-8 652143-80-1 652143-81-2 652143-82-3  
 652143-83-4 652143-84-5 652143-85-6  
 (nonaq. **electrolyte**; secondary lithium batteries with  
 nonaq. **electrolytes** with cyclic solvents and  
 noncyclic solvents)

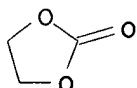
L41 ANSWER 12 OF 25 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2003:511642 HCAPLUS  
 DOCUMENT NUMBER: 139:55551  
 TITLE: Secondary nonaqueous **electrolyte**  
 battery  
 INVENTOR(S): Miyake, Masahide; Fujimoto, Masahisa; Koga,  
 Hideyuki; Tarui, Hisaki; Fujitani, Shin  
 PATENT ASSIGNEE(S): Sanyo Electric Co., Ltd., Japan  
 SOURCE: PCT Int. Appl., 82 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

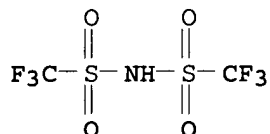
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2003054986	A1	20030703	WO 2002-JP13405	2002 1220
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
US 2005019655	A1	20050127	US 2004-495106	2004 0510
PRIORITY APPLN. INFO.:			JP 2001-389259	A 2001 1221
			JP 2002-178142	A 2002 0619
			WO 2002-JP13405	W 2002 1220
AB The battery uses S as cathode active mass and a nonaq. <b>electrolyte</b> solution m. $\leq 60^\circ$ . The <b>electrolyte</b> solution may also contain reduction products of S, may use a solvent containing cyclic or linear ether or fluorinated carbonate, and the <b>electrolyte</b> salt is a Li salt, which may be mixed with a quaternary ammonium salt. Preferably, the anode is a Li intercalating anode.				
IT 96-48-0, $\gamma$ -Butyrolactone 96-49-1, Ethylene carbonate 90076-65-6 548478-05-3 (compsn. of low m.p. <b>electrolyte</b> solns. for secondary lithium/sulfur batteries)				
RN 96-48-0 HCAPLUS				
CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)				



RN 96-49-1 HCAPLUS  
 CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)

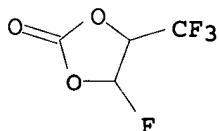


RN 90076-65-6 HCAPLUS  
 CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (9CI) (CA INDEX NAME)



● Li

RN 548478-05-3 HCAPLUS  
 CN 1,3-Dioxolan-2-one, 4-fluoro-5-(trifluoromethyl)- (9CI) (CA INDEX NAME)



IC ICM H01M004-02  
 ICS H01M004-60; H01M004-62; H01M010-40  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 ST lithium sulfur battery low mp **electrolyte** soln compn  
 IT Battery **electrolytes**  
     (compns. of low m.p. **electrolyte** solns. for secondary  
     lithium/sulfur batteries)  
 IT Secondary batteries  
     (secondary lithium/sulfur batteries with low m.p.  
     **electrolyte** solns.)  
 IT 1317-40-4, Copper sulfide (CuS) 7704-34-9, Sulfur, uses  
     (cathodes for secondary lithium/sulfur batteries with low m.p.  
     **electrolyte** solns.)  
 IT 96-48-0, γ-Butyrolactone 96-49-1, Ethylene  
     carbonate 105-58-8, Diethyl carbonate 109-99-9, Thf, uses  
     110-71-4, 1,2-Dimethoxyethane 646-06-0, 1,3-Dioxolane

661-36-9, Tetramethylammonium fluoroborate 12136-58-2, Lithium sulfide 21324-40-3, Lithium hexafluorophosphate 90076-65-6 210230-43-6 216299-76-2 268536-05-6 497220-96-9 548478-05-3

(compsns. of low m.p. electrolyte solns. for secondary lithium/sulfur batteries)

REFERENCE COUNT: 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L41 ANSWER 13 OF 25 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2002:889107 HCAPLUS

DOCUMENT NUMBER: 137:372581

TITLE: Nonaqueous electrolyte solution, composition for polymer gel electrolyte, polymer gel electrolyte, secondary battery, and double layer capacitor

INVENTOR(S): Sato, Takaya; Iida, Hiroki; Maruo, Tatsuya; Banno, Kimiyo

PATENT ASSIGNEE(S): Nisshinbo Industries, Inc., Japan

SOURCE: PCT Int. Appl., 60 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002093679	A1	20021121	WO 2002-JP3937	2002 0419
<p>W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM</p> <p>RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG</p>				
EP 1403957	A1	20040331	EP 2002-720527	2002 0419
<p>R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR</p>				
CN 1507669	A	20040623	CN 2002-809617	2002 0419
TW 561640	B	20031111	TW 2002-91109366	2002 0506
US 2004146786	A1	20040729	US 2003-476969	2003 1107
PRIORITY APPLN. INFO.:			JP 2001-140492	A



2001  
0510

WO 2002-JP3937

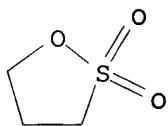
W

2002  
0419

AB The **electrolyte** solution contains a compound having a redox potential  $\geq 1.0$  V vs. Li/Li+. The **electrolyte** solution contains an ion conductive salt, an organic solvent, and 0.01-7% of the above described compound selected from maleic anhydride, N-Me maleimide, N-vinylpyrrolidone, tetrahydrofurfuryl (meth)acrylate, vinyl oxazoline, propane sultone, butane sultone, vinylene carbonate, N-vinyl caprolactam, 2-vinyl-1,3-dioxolane, vinylethylene carbonate, ethylene sulfide, their derivs., butadiene sulfone, and fluoroethylene carbonate. The polymer gel **electrolyte** is a gelled composition containing the **electrolyte** solution and a compound, other than those mentioned above, having  $\geq$  reactive double bonds. The battery and capacitor use the above **electrolyte**.

IT 1120-71-4, Propanesultone 28452-93-9,  
Butadienesulfone 114435-02-8  
(**electrolyte** additives with controlled redox potential for secondary lithium batteries and double layer capacitors)

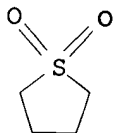
RN 1120-71-4 HCAPLUS  
CN 1,2-Oxathiolane, 2,2-dioxide (8CI, 9CI) (CA INDEX NAME)



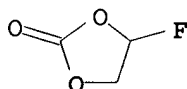
RN 28452-93-9 HCAPLUS  
CN Thiophene, dihydro-, 1,1-dioxide (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

CM 1

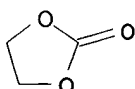
CRN 126-33-0  
CMF C4 H8 O2 S



RN 114435-02-8 HCAPLUS  
CN 1,3-Dioxolan-2-one, 4-fluoro- (9CI) (CA INDEX NAME)



IT 96-49-1, Ethylene carbonate  
 (nonaq. **electrolyte** solns. and polymer gel  
**electrolytes** for secondary lithium batteries and double  
 layer capacitors)  
 RN 96-49-1 HCAPLUS  
 CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



IC ICM H01M010-40  
 ICS H01G009-038; H01G009-04  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 ST battery polymer gel **electrolyte** additive redox  
 potential; capacitor polymer gel **electrolyte** additive  
 redox potential  
 IT Capacitors  
 (double layer; nonaq. **electrolyte** solns. and polymer  
 gel **electrolytes** for secondary lithium batteries and  
 double layer capacitors)  
 IT Battery **electrolytes**  
 (nonaq. **electrolyte** solns. and polymer gel  
**electrolytes** for secondary lithium batteries and double  
 layer capacitors)  
 IT Polyurethanes, uses  
 (nonaq. **electrolyte** solns. and polymer gel  
**electrolytes** for secondary lithium batteries and double  
 layer capacitors)  
 IT 88-12-0, uses 108-31-6, Maleic anhydride, uses 420-12-2,  
 Ethylene sulfide 872-36-6, Vinylene carbonate 930-88-1,  
 N-Methyl maleimide 1120-71-4, Propanesultone  
 1633-83-6, Butanesultone 2235-00-9, N-Vinylcaprolactam  
 2455-24-5, Tetrahydrofurfuryl methacrylate 3984-22-3,  
 2-Vinyl-1,3-dioxolane 28452-93-9, Butadienesulfone  
 114435-02-8 128220-92-8  
 (**electrolyte** additives with controlled redox  
 potential for secondary lithium batteries and double layer  
 capacitors)  
 IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate  
 108-32-7, Propylene carbonate 3290-92-4D, Trimethylolpropane  
 trimethacrylate, polymer with Polyethylene glycol  
 dimethacrylate-polyethylene glycol mono methacrylate Me  
 ether-poly(vinyl alc.) cyanoethylate 9002-89-5D, Poly(vinyl  
 alcohol), cyanoethylated 9002-89-5D, Poly(vinyl alcohol),  
 cyanoethylated, polymer with Polyethylene glycol  
 dimethacrylate-polyethylene glycol mono methacrylate Me  
 ether-trimethylolpropane trimethacrylate copolymer 21324-40-3,  
 Lithium hexafluorophosphate 25852-47-5D, Polyethylene glycol  
 dimethacrylate, polymer with polyethylene glycol mono methacrylate  
 Me ether-poly(vinyl alc.) cyanoethylate-trimethylolpropane  
 trimethacrylate copolymer 26915-72-0D, Polyethylene glycol mono

methacrylate methyl ether, polymer with Polyethylene glycol  
 dimethacrylate-poly(vinyl alc.) cyanoethylate-trimethylolpropane  
 trimethacrylate copolymer 475572-92-0  
 (nonaq. electrolyte solns. and polymer gel  
 electrolytes for secondary lithium batteries and double  
 layer capacitors)

REFERENCE COUNT: 24 THERE ARE 24 CITED REFERENCES AVAILABLE  
 FOR THIS RECORD. ALL CITATIONS AVAILABLE  
 IN THE RE FORMAT

L41 ANSWER 14 OF 25 HCAPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2002:889106 HCAPLUS  
 DOCUMENT NUMBER: 137:372580  
 TITLE: Method for injecting nonaqueous polymer gel  
 electrolyte solution  
 INVENTOR(S): Sato, Takaya; Iida, Hiroki; Maruo, Tatsuya;  
 Banno, Kimiyo  
 PATENT ASSIGNEE(S): Nisshinbo Industries, Inc., Japan  
 SOURCE: PCT Int. Appl., 42 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

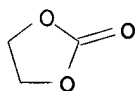
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002093678	A1	20021121	WO 2002-JP3936	2002 0419
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
EP 1394886	A1	20040303	EP 2002-720526	2002 0419
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
CN 1528029	A	20040908	CN 2002-809619	2002 0419
US 2004139587	A1	20040722	US 2003-476977	2003 1107
PRIORITY APPLN. INFO.:				JP 2001-140569 A
				2001 0510
WO 2002-JP3936				W
				2002 0419

AB Electrodes and separators, in batteries and double layer capacitors, are impregnated with a polymer gel **electrolyte**, by injecting an **electrolyte** solution containing a pregel composition having viscosity  $\leq 100$  cP at  $20^\circ$ . The batteries and capacitors are heated to  $\geq 40^\circ$  before the injection. Preferably, the **electrolyte** solution contains an ion conductive salt, an organic **electrolyte** solution, and 0./01-7% of a compound selected from maleic anhydride, N-Me maleimide, N-vinylpyrrolidone, tetrahydrofurfuryl (meth)acrylate, vinyloxazoline, propanesultone, butanesultone, vinylene carbonate, N-vinylcaprolactone, 2-vinyl-1,3-dioxazoline, vinylethylene carbonate, butadienesulfone, ethylene sulfide, their derivs., and fluoroethylene carbonate.

IT 96-49-1, Ethylene carbonate 1120-71-4,  
Propanesultone 183301-46-4  
(comps. and method for injecting nonaq. polymer gel **electrolyte** solns. in batteries and double layer capacitors)

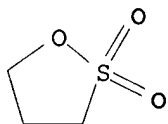
RN 96-49-1 HCAPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



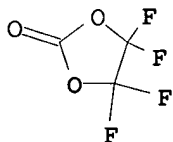
RN 1120-71-4 HCAPLUS

CN 1,2-Oxathiolane, 2,2-dioxide (8CI, 9CI) (CA INDEX NAME)



RN 183301-46-4 HCAPLUS

CN 1,3-Dioxolan-2-one, 4,4,5,5-tetrafluoro- (9CI) (CA INDEX NAME)



IC ICM H01M010-40  
ICS H01M002-36; H01G009-038

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST battery electrode separator polymer gel **electrolyte** injection; capacitor electrode separator polymer gel **electrolyte** injection

IT Carbonaceous materials (technological products)  
(comps. and method for injecting nonaq. polymer gel **electrolyte** solns. in batteries and double layer capacitors)

IT Battery **electrolytes**  
(compns. and method for injecting nonaq. polymer gel  
**electrolyte** solns. in secondary lithium batteries)

IT Capacitors  
(double layer; compns. and method for injecting nonaq. polymer  
gel **electrolyte** solns. in double layer capacitors)

IT 88-12-0, uses 96-49-1, Ethylene carbonate 105-58-8,  
Diethyl carbonate 108-31-6, Maleic anhydride, uses 108-32-7,  
Propylene carbonate 420-12-2, Ethylene sulfide 872-36-6,  
Vinylene carbonate 930-88-1, N-Methyl maleimide  
1120-71-4, Propanesultone 2455-24-5, Tetrahydrofurfuryl  
methacrylate 12190-79-3, Cobalt lithium oxide (CoLiO<sub>2</sub>)  
13670-33-2 21324-40-3, Lithium hexafluorophosphate  
183301-46-4  
(compns. and method for injecting nonaq. polymer gel  
**electrolyte** solns. in batteries and double layer  
capacitors)

IT 3290-92-4D, Trimethylolpropane trimethacrylate, polymer with  
cyanoethylated poly(vinyl alc.), poly(ethylene glycol)  
dimethacrylate, and poly(ethylene glycol) methacrylate Me ether  
9002-89-5D, Poly(vinyl alcohol), cyanoethylated, polymer with  
poly(ethylene glycol) dimethacrylate, poly(ethylene glycol)  
methacrylate Me ether, and trimethylolpropane trimethacrylate  
25852-47-5D, Poly(ethylene glycol) dimethacrylate, polymer with  
cyanoethylated poly(vinyl alc.), poly(ethylene glycol)  
methacrylate Me ether, and trimethylolpropane trimethacrylate  
26915-72-0D, Poly(ethylene glycol) methacrylate methyl ether,  
polymer with cyanoethylated poly(vinyl alc.), poly(ethylene  
glycol) dimethacrylate, and trimethylolpropane trimethacrylate  
(pregel; compns. and method for injecting nonaq. polymer gel  
**electrolyte** solns. in batteries and double layer  
capacitors)

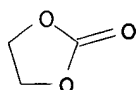
REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE  
FOR THIS RECORD. ALL CITATIONS AVAILABLE  
IN THE RE FORMAT

L41 ANSWER 15 OF 25 HCAPLUS COPYRIGHT 2006 ACS on STN  
ACCESSION NUMBER: 2002:818619 HCAPLUS  
DOCUMENT NUMBER: 138:156187  
TITLE: Flame retardant **electrolytes** for  
Li-ion batteries  
AUTHOR(S): Peramunage, D.; Ziegelbauer, J. M.; Holleck,  
G. L.  
CORPORATE SOURCE: EIC Laboratories, Inc., Norwood, MA, 02062,  
USA  
SOURCE: Proceedings - Electrochemical Society (2001),  
2000-21(Rechargeable Lithium Batteries),  
306-314  
CODEN: PESODO; ISSN: 0161-6374  
PUBLISHER: Electrochemical Society  
DOCUMENT TYPE: Journal  
LANGUAGE: English

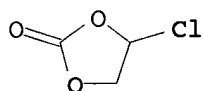
AB Initial results are presented from the development of new flame  
retardant **electrolytes** for Li-ion cells. Several groups  
of flame retardant additives were identified, which in quantities  
of 5-20% rendered currently used Li-ion cell **electrolytes**  
nonflammable in our test. The test procedure was based on the UL  
94 flammability standard. It had been modified by incorporating a  
fiberglass wick soaked with the test **electrolyte** in  
place of a solid sample. A very effective flame retardant

additive, tri-Me phosphate (TMP) reduced on graphite below 0.5 V vs. Li but was stable with coke anodes. Efficient operation was demonstrated in a coke/LiMn<sub>2</sub>O<sub>4</sub> cell containing this **electrolyte**. In the presence of effective solid **electrolyte** interface formers, TMP may also be compatible with graphite.

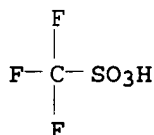
IT 96-49-1, Ethylene carbonate 3967-54-2,  
Chloroethylene carbonate  
(**electrolyte** solvent; development of flame retardant  
**electrolytes** for lithium-ion batteries)  
RN 96-49-1 HCAPLUS  
CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



RN 3967-54-2 HCAPLUS  
CN 1,3-Dioxolan-2-one, 4-chloro- (9CI) (CA INDEX NAME)

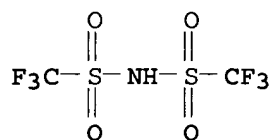


IT 33454-82-9, Lithium triflate 90076-65-6, Lithium  
bis(trifluoromethylsulfonyl)imide  
(**electrolyte**; development of flame retardant  
**electrolytes** for lithium-ion batteries)  
RN 33454-82-9 HCAPLUS  
CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA  
INDEX NAME)



● Li

RN 90076-65-6 HCAPLUS  
CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-  
, lithium salt (9CI) (CA INDEX NAME)



## ● Li

- CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
- ST flame retardant **electrolyte** lithium ion battery; methyl phosphate flame retardant **electrolyte** lithium ion battery
- IT Battery **electrolytes**  
(development of flame retardant **electrolytes** for lithium-ion batteries)
- IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 3967-54-2, Chloroethylene carbonate  
(**electrolyte** solvent; development of flame retardant **electrolytes** for lithium-ion batteries)
- IT 7791-03-9, Lithium perchlorate 21324-40-3, Lithium hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate 33454-82-9, Lithium triflate 90076-65-6, Lithium bis(trifluoromethylsulfonyl)imide  
(**electrolyte**; development of flame retardant **electrolytes** for lithium-ion batteries)
- IT 107-04-0, 1-Bromo-2-chloroethane 109-70-6, 1-Bromo-3-chloropropane 126-73-8, Tributyl phosphate, uses 512-56-1, Trimethyl phosphate  
(flame retardant additive; development of flame retardant **electrolytes** for lithium-ion batteries)
- IT 3741-38-6, Ethylene sulfite  
(solid **electrolyte** interface former; development of flame retardant **electrolytes** for lithium-ion batteries)

REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L41 ANSWER 16 OF 25 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2002:66770 HCAPLUS

DOCUMENT NUMBER: 136:121064

TITLE: Nonaqueous **electrolyte** lithium secondary battery

INVENTOR(S): Iwamoto, Kazuyu; Oura, Takafumi; Hatazaki, Makino; Yoshizawa, Hiroshi; Sonoda, Kumiko; Nakanishi, Shinji

PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan

SOURCE: Eur. Pat. Appl., 31 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

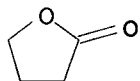
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1174940	A1	20020123	EP 2001-117048	2001 0712
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2002033119	A2	20020131	JP 2000-215518	2000 0717
JP 2002033120	A2	20020131	JP 2000-215519	2000 0717
JP 2002033124	A2	20020131	JP 2000-215520	2000 0717
US 2002039677	A1	20020404	US 2001-901130	2001 0710
US 6958198	B2	20051025		
CN 1333580	A	20020130	CN 2001-123135	2001 0717
PRIORITY APPLN. INFO.:			JP 2000-215518	A 2000 0717
			JP 2000-215519	A 2000 0717
			JP 2000-215520	A 2000 0717

AB The invention relates to a nonaq. electrochem. apparatus in which the difference ( $\gamma_1 - \gamma_{se}$ ) between the surface tension  $\gamma_1$  of nonaq. **electrolyte** and the surface free energy  $\gamma_{se}$  of electrode is not more than 10 dynes/cm. The nonaq. **electrolyte** contains a F-containing surface active agent.

IT 96-48-0,  $\gamma$ -Butyrolactone 96-49-1, Ethylene carbonate 90076-65-6 (nonaq. **electrolyte** lithium secondary battery)

RN 96-48-0 HCAPLUS

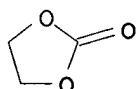
CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



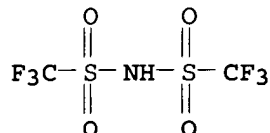
RN 96-49-1 HCAPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



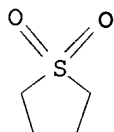


RN 90076-65-6 HCAPLUS  
 CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-  
 , lithium salt (9CI) (CA INDEX NAME)

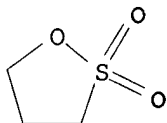


● Li

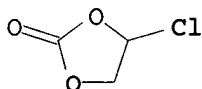
IT 126-33-0, Sulfolane 1120-71-4, Propanesultone  
 3967-54-2, Chloroethylene carbonate  
 (nonaq. **electrolyte** lithium secondary battery)  
 RN 126-33-0 HCAPLUS  
 CN Thiophene, tetrahydro-, 1,1-dioxide (8CI, 9CI) (CA INDEX NAME)



RN 1120-71-4 HCAPLUS  
 CN 1,2-Oxathiolane, 2,2-dioxide (8CI, 9CI) (CA INDEX NAME)



RN 3967-54-2 HCAPLUS  
 CN 1,3-Dioxolan-2-one, 4-chloro- (9CI) (CA INDEX NAME)



IC ICM H01M010-40  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 ST nonaq **electrolyte** lithium secondary battery  
 IT Carboxylic acids, uses

- (C2-20, fluoroalkyl; nonaq. **electrolyte** lithium secondary battery)
- IT Sulfonic acids, uses  
(alkanesulfonic, sodium salts, fluoro-; nonaq. **electrolyte** lithium secondary battery)
- IT Anhydrides  
Ethers, uses  
(cyclic; nonaq. **electrolyte** lithium secondary battery)
- IT Carboxylic acids, uses  
(esters, cyclic; nonaq. **electrolyte** lithium secondary battery)
- IT Secondary batteries  
(lithium; nonaq. **electrolyte** lithium secondary battery)
- IT Battery electrodes  
Battery **electrolytes**  
Surface free energy  
Surface tension  
Surfactants  
(nonaq. **electrolyte** lithium secondary battery)
- IT Carbonaceous materials (technological products)  
(nonaq. **electrolyte** lithium secondary battery)
- IT Cyclic compounds  
(nonaq. **electrolyte** lithium secondary battery)
- IT Lactones  
(nonaq. **electrolyte** lithium secondary battery)
- IT Fluoropolymers, uses  
(nonaq. **electrolyte** lithium secondary battery)
- IT 463-79-6D, Carbonic acid, esters 1343-98-2D, Silicic acid, esters 7664-38-2D, Phosphoric acid, esters 7664-93-9D, Sulfuric acid, esters 7697-37-2D, Nitric acid, esters 7782-77-6D, Nitrous acid, esters 7782-99-2D, Sulfurous acid, esters 10043-35-3D, Boric acid, esters 13598-36-2D, Phosphorous acid, esters  
(cyclic; nonaq. **electrolyte** lithium secondary battery)
- IT 79-20-9, Methyl acetate 85-44-9, Phthalic anhydride 96-48-0,  $\gamma$ -Butyrolactone 96-49-1, Ethylene carbonate 105-54-4, Ethyl butyrate 105-58-8, Diethyl carbonate 108-29-2,  $\gamma$ -Valerolactone 108-30-5, Succinic anhydride, uses 108-32-7, Propylene carbonate 109-60-4, n-Propyl acetate 123-86-4, Butyl acetate 140-11-4, Benzyl acetate 141-78-6, Ethyl acetate, uses 517-23-7,  $\alpha$ -Acetyl- $\gamma$ -butyrolactone 540-42-1, Isobutyl propionate 554-12-1, Methyl propionate 616-02-4, Citraconic anhydride 616-38-6, Dimethyl carbonate 623-53-0, Ethylmethyl carbonate 1679-47-6,  $\alpha$ -Methyl- $\gamma$ -butyrolactone 2170-03-8, Itaconic anhydride 2453-03-4, 1,3-Dioxan-2-one 7782-42-5, Graphite, uses 9002-88-4, Polyethylene 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 52627-24-4, Cobalt lithium oxide 52876-41-2, Trimethylene borate 90076-65-6 132843-44-8 201416-30-0, 4,5-Diphenyl-1,3,2-dioxathiole-2,2-dioxide 389604-01-7  
(nonaq. **electrolyte** lithium secondary battery)
- IT 77-79-2, Sulfolene 102-09-0, Diphenyl carbonate 126-33-0, Sulfolane 463-79-6D, Carbonic acid, ester 822-38-8, Ethylene trithiocarbonate 872-36-6, Vinylene carbonate 872-93-5, 3-MethylSulfolane 930-35-8, Vinylene trithiocarbonate 1120-71-4, Propanesultone 1600-44-8 1633-83-6,

1,4-Butanesultone 2171-74-6, 1,3-Benzodioxol-2-one 2965-52-8  
 3741-38-6, Ethylene sulfite 3967-54-2, Chloroethylene  
 carbonate 4236-15-1 4427-92-3, Phenylethylene carbonate  
 4427-96-7, Vinylethylene carbonate 6255-58-9 7440-44-0,  
 Carbon, uses 7704-34-9D, Sulfur, ester 16761-08-3 21240-34-6  
 37228-47-0, Ethylene phosphite 40630-61-3 52550-45-5  
 75032-95-0, Disodium N-perfluorooctanesulfonylglutamate  
 75046-16-1 122036-85-5 324547-56-0 366787-88-4  
 (nonaq. **electrolyte** lithium secondary battery)

IT 24937-79-9, PvdF

(nonaq. **electrolyte** lithium secondary battery)

REFERENCE COUNT: 23 THERE ARE 23 CITED REFERENCES AVAILABLE  
 FOR THIS RECORD. ALL CITATIONS AVAILABLE  
 IN THE RE FORMAT

L41 ANSWER 17 OF 25 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2001:796408 HCAPLUS

DOCUMENT NUMBER: 135:346868

TITLE: Gel **electrolyte** battery

INVENTOR(S): Shibuya, Mashio; Suzuki, Yusuke

PATENT ASSIGNEE(S): Sony Corporation, Japan

SOURCE: Eur. Pat. Appl., 19 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

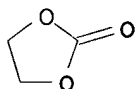
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1150374	A1	20011031	EP 2001-110350	2001 0426
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2001313075	A2	20011109	JP 2000-132925	2000 0427
<u>US 2001053485</u>	A1	20011220	US 2001-844004	2001 0427
CN 1333579	A	20020130	CN 2001-122097	2001 0427
PRIORITY APPLN. INFO.:			JP 2000-132925	A 2000 0427

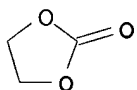
AB In a gel **electrolyte**, the nonaq. **electrolytic** solution having a lithium-containing **electrolyte** salt dissolved in a nonaq. solvent is gelled by a matrix polymer. The gel **electrolyte** includes a halogen substituted ethylene carbonate obtained by replacing one or more hydrogen atoms of ethylene carbonate by halogens. Since the halogen substituted ethylene carbonate (for instance, fluorinated ethylene carbonate) is extremely low in its reactivity with a neg. electrode, a loss capacity is small so that it is very effective for obtaining a high capacity. Further, the halogen substituted ethylene carbonate has a m.p. lower than that of ethylene carbonate, it can

realize a large capacity with less deterioration of a low temperature performance than that of ethylene carbonate. Accordingly, a strength, a liquid retaining characteristic, a stability relative to the neg. electrode, a battery capacity, a cyclic characteristic, a load characteristic and a low temperature characteristic can be improved.

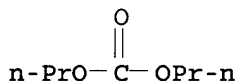
IT 96-49-1, Ethylene carbonate 96-49-1D, Ethylene carbonate, fluorinated 623-96-1, Dipropyl carbonate 90076-65-6 183301-46-4 (gel electrolyte battery)  
 RN 96-49-1 HCAPLUS  
 CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



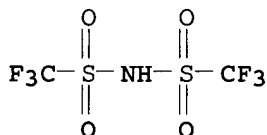
RN 96-49-1 HCAPLUS  
 CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



RN 623-96-1 HCAPLUS  
 CN Carbonic acid, dipropyl ester (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

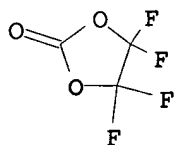


RN 90076-65-6 HCAPLUS  
 CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (9CI) (CA INDEX NAME)



● Li

RN 183301-46-4 HCAPLUS  
 CN 1,3-Dioxolan-2-one, 4,4,5,5-tetrafluoro- (9CI) (CA INDEX NAME)



IC ICM H01M010-40  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 Section cross-reference(s): 38  
 ST battery gel **electrolyte**; fluorinated ethylene carbonate  
 gel **electrolyte** battery  
 IT Battery **electrolytes**  
 Secondary batteries  
 (gel **electrolyte** battery)  
 IT Carbonaceous materials (technological products)  
 Fluoropolymers, uses  
 Polyoxyalkylenes, uses  
 (gel **electrolyte** battery)  
 IT Transition metal oxides  
 (lithiated; gel **electrolyte** battery)  
 IT Lithium alloy, base  
 (gel **electrolyte** battery)  
 IT 96-49-1, Ethylene carbonate 96-49-1D, Ethylene  
 carbonate, fluorinated 105-58-8, Diethyl carbonate 108-32-7,  
 Propylene carbonate 616-38-6, Dimethyl carbonate 623-53-0,  
 Ethyl methyl carbonate 623-96-1, Dipropyl carbonate  
 7439-93-2, Lithium, uses 9011-17-0, Hexafluoropropylene-  
 vinylidene fluoride copolymer 12190-79-3, Cobalt lithium oxide  
 colio2 14283-07-9, Lithium tetrafluoroborate 21324-40-3,  
 Lithium hexafluorophosphate 24937-79-9, PvdF 25014-41-9,  
 Polyacrylonitrile 25067-61-2, Polymethacrylonitrile  
 25322-68-3, Peo 25322-69-4, Polypropylene oxide 30714-78-4,  
 Ethyl butyl carbonate 35363-40-7, Ethyl propyl carbonate  
 56525-42-9, Methyl propyl carbonate 90076-65-6  
 132404-42-3 132843-44-8 183301-46-4 210406-60-3  
 (gel **electrolyte** battery)  
 IT 7782-42-5, Graphite, uses  
 (gel **electrolyte** battery)  
 IT 7429-90-5, Aluminum, uses  
 (gel **electrolyte** battery)  
 REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE  
 FOR THIS RECORD. ALL CITATIONS AVAILABLE  
 IN THE RE FORMAT

L41 ANSWER 18 OF 25 HCAPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2001:759631 HCAPLUS  
 DOCUMENT NUMBER: 135:306245  
 TITLE: Nonaqueous **electrolyte** secondary  
 battery  
 INVENTOR(S): Hatazaki, Makino; Iwamoto, Kazuya; Sonoda,  
 Kumiko; Yoshizawa, Hiroshi  
 PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd.,  
 Japan  
 SOURCE: Eur. Pat. Appl., 13 pp.  
 CODEN: EPXXDW  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1

## PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1146586	A2	20011017	EP 2001-303366	2001 0410
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2001297790	A2	20011026	JP 2000-109268	2000 0411
US 2001038949	A1	20011108	US 2001-828941	2001 0410
CN 1317845	A	20011017	CN 2001-116833	2001 0411
PRIORITY APPLN. INFO.:			JP 2000-109268	A 2000 0411

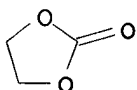
## OTHER SOURCE(S): MARPAT 135:306245

AB A nonaq. **electrolyte** secondary battery having excellent charge/discharge characteristics and a long cycle life, and generating a smaller amount of gas during storage than conventional batteries, comprises a pos. electrode; a neg. electrode; and a nonaq. **electrolyte** comprising a nonaq. solvent and a solute dissolved therein. This improvement is achieved by adding to the nonaq. **electrolyte** a surface active agent represented by the general formula :  $X-C_nF_{2n}-Y-(CH_2-CH_2)_m-Z$ ; where X is H or F, Y is -CONH- or -SO<sub>2</sub>NR- in which R is an alkyl group, Z is -OH, -CH<sub>3</sub>, -PO<sub>3</sub>W<sub>2</sub> or -SO<sub>3</sub>W in which W is an alkali metal,  $4 \leq n \leq 10$ , and  $20 \leq m \leq 100$ .

IT 96-49-1, Ethylene carbonate  
(nonaq. **electrolyte** secondary battery)

RN 96-49-1 HCAPLUS

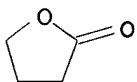
CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



IT 96-48-0,  $\gamma$ -Butyrolactone 126-33-0,  
Sulfolane 1120-71-4, Propanesultone 3967-54-2,  
Chloroethylene carbonate  
(nonaq. **electrolyte** secondary battery)

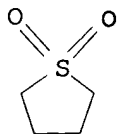
RN 96-48-0 HCAPLUS

CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



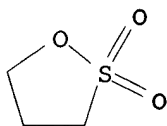
RN 126-33-0 HCAPLUS

CN Thiophene, tetrahydro-, 1,1-dioxide (8CI, 9CI) (CA INDEX NAME)



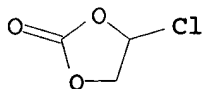
RN 1120-71-4 HCAPLUS

CN 1,2-Oxathiolane, 2,2-dioxide (8CI, 9CI) (CA INDEX NAME)



RN 3967-54-2 HCAPLUS

CN 1,3-Dioxolan-2-one, 4-chloro- (9CI) (CA INDEX NAME)



IC ICM H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST battery nonaq **electrolyte** secondary; surfactant additive

battery nonaq **electrolyte** secondary

IT Oxides (inorganic), uses

(lithiated; nonaq. **electrolyte** secondary battery)

IT Battery **electrolytes**

Secondary batteries

Surfactants

(nonaq. **electrolyte** secondary battery)

IT Carbonaceous materials (technological products)

(nonaq. **electrolyte** secondary battery)

IT 96-49-1, Ethylene carbonate 108-32-7, Propylene

carbonate 623-53-0, Ethyl methyl carbonate

(nonaq. **electrolyte** secondary battery)

IT 77-79-2, Sulfolene 96-48-0,  $\gamma$ -Butyrolactone

102-09-0, Diphenyl carbonate 105-58-8, Diethyl carbonate

126-33-0, Sulfolane 274-17-9, 1,3,2-Benzodioxathiole

420-12-2, Ethylene sulfide 616-38-6, Dimethyl carbonate

822-38-8, Ethylene trithiocarbonate 872-36-6, Vinylene carbonate

872-93-5, 3-Methylsulfolane 930-35-8, 1,3-Dithiole-2-thione

1120-71-4, Propanesultone 1633-83-6, 1,4-Butanesultone

2171-74-6, 1,3-Benzodioxol-2-one 3967-54-2,

Chloroethylene carbonate 4427-92-3, Phenylethylene carbonate

4427-96-7, Vinylene carbonate 16761-08-3 21240-34-6

39700-44-2 122036-85-5 324547-56-0 366784-73-8 366787-88-4

(nonaq. **electrolyte** secondary battery)

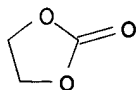
L41 ANSWER 19 OF 25 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2001:208040 HCAPLUS

DOCUMENT NUMBER: 134:225075  
 TITLE: Nonaqueous and polymer **electrolytes**  
 for lithium battery and electrochemical  
 capacitor  
 INVENTOR(S): Arai, Juichi; Katayama, Hideaki; Kobayashi,  
 Mitsuru  
 PATENT ASSIGNEE(S): Hitachi, Ltd., Japan  
 SOURCE: Eur. Pat. Appl., 33 pp.  
 CODEN: EPXXDW  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

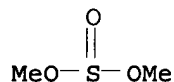
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1085591	A1	20010321	EP 2000-118434	2000 0824
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2001085058	A2	20010330	JP 1999-265002	1999 0920
US 6495293	B1	20021217	US 2000-645428	2000 0824
TW 472412	B	20020111	TW 2000-89117443	2000 0829
PRIORITY APPLN. INFO.:			JP 1999-265002	A 1999 0920

OTHER SOURCE(S): MARPAT 134:225075  
 AB The object of the present invention is to provide organic  
**electrolyte** and polymer **electrolyte**, wherein  
 diffusivity of mobile ions is enhanced; and to provide lithium  
 primary battery, lithium secondary battery, polymer secondary  
 battery, and electrochem. capacitor, wherein their capacities at a  
 low temperature are increased. The present invention relates to nonaq.  
**electrolyte** and polymer **electrolyte**, wherein  
 fluorinated solvent having fluorinated alkyl group, whose terminal  
 end structure is unsym. structure, is mixed with the  
**electrolyte**, and to various usage using the above  
**electrolyte**.  
 IT 96-49-1, Ethylene carbonate 616-42-2, Dimethyl  
 sulfite 3967-54-2, Chloroethylene carbonate  
 33454-82-9, Lithium triflate  
 (nonaq. and polymer **electrolytes** for lithium battery  
 and electrochem. capacitor)  
 RN 96-49-1 HCAPLUS  
 CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)

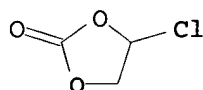




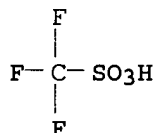
RN 616-42-2 HCAPLUS  
 CN Sulfurous acid, dimethyl ester (8CI, 9CI) (CA INDEX NAME)



RN 3967-54-2 HCAPLUS  
 CN 1,3-Dioxolan-2-one, 4-chloro- (9CI) (CA INDEX NAME)



RN 33454-82-9 HCAPLUS  
 CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

IC ICM H01M010-40  
 ICS H01G009-02  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 Section cross-reference(s): 38, 76  
 ST lithium battery nonaq polymer **electrolyte**; electrochem  
 capacitor nonaq polymer **electrolyte**  
 IT Ethers, uses  
 (fluoroalkyl; nonaq. and polymer **electrolytes** for  
 lithium battery and electrochem. capacitor)  
 IT Primary batteries  
 Secondary batteries  
 (lithium; nonaq. and polymer **electrolytes** for lithium  
 battery and electrochem. capacitor)  
 IT Battery **electrolytes**  
**Electrolytic** capacitors  
 Polymer **electrolytes**  
 Secondary batteries  
 (nonaq. and polymer **electrolytes** for lithium battery  
 and electrochem. capacitor)  
 IT Fluoropolymers, uses  
 (nonaq. and polymer **electrolytes** for lithium battery  
 and electrochem. capacitor)  
 IT 96-49-1, Ethylene carbonate 382-34-3,  
 1,1,2,3,3,3-Hexafluoropropyl methyl ether 425-88-7 429-06-1,  
 Tetraethylammonium tetrafluoroborate 616-38-6, Dimethyl

carbonate 616-42-2, Dimethyl sulfite 678-74-0  
872-36-6, Vinylene carbonate 1313-13-9, Manganese dioxide, uses  
2795-50-8 3021-63-4 3741-38-6, Ethylene sulfite  
3967-54-2, Chloroethylene carbonate 7782-42-5, Graphite,  
uses 21324-40-3, Lithium hexafluorophosphate 24937-79-9, Pvd  
33454-82-9, Lithium triflate 37830-90-3,  
Dimethylvinylene carbonate 132843-44-8 163702-07-6  
163702-08-7

(nonaq. and polymer **electrolytes** for lithium battery  
and electrochem. capacitor)

IT 7439-93-2, Lithium, uses  
(nonaq. and polymer **electrolytes** for lithium battery  
and electrochem. capacitor)

REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE  
FOR THIS RECORD. ALL CITATIONS AVAILABLE  
IN THE RE FORMAT

L41 ANSWER 20 OF 25 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2000:847085 HCAPLUS

DOCUMENT NUMBER: 134:103155

TITLE: Origin of graphite exfoliation; an  
investigation of the important role of solvent  
cointercalation

AUTHOR(S): Chung, Geun-Chang; Kim, Hyung-Jin; Yu,  
Seung-Il; Jun, Song-Hui; Choi, Jong-Wook; Kim,  
Myung-Hwan

CORPORATE SOURCE: Korea Power Cell, Incorporated, Taejon,  
305-380, S. Korea

SOURCE: Journal of the Electrochemical Society (2000),  
147(12), 4391-4398  
CODEN: JESOAN; ISSN: 0013-4651

PUBLISHER: Electrochemical Society

DOCUMENT TYPE: Journal

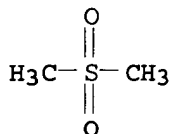
LANGUAGE: English

AB To elucidate the origin of graphite exfoliation, we have  
investigated the influence of various material parameters relevant  
to solvent co-intercalation, such as the cation, the  
**electrolytic** solvents, and the structure of graphite, on  
the solvent decomposition behavior. By electrochem. probing changes in  
the electrode, we demonstrated that a large increase of surface  
area accompanies the decomposition of propylene carbonate (PC).  
Furthermore, such a change in surface area is dramatically  
amplified when Li<sup>+</sup> is replaced by tetrabutylammonium ion. A  
slight structural modification of PC exerts a profound influence  
on the solvent decomposition behavior, as demonstrated with cis- and  
trans-2,3-butylene carbonate. These reaction behaviors are also  
altered significantly by the choice of graphite. Such an  
influence of graphite structure is particularly surprising for  
t-BC **electrolyte**, in which SFG44 graphite undergoes  
extensive exfoliation, whereas SFG6 graphite and MCMB25 can be  
cycled reversibly. These results can be best explained by  
incorporating the co-intercalation of cyclic carbonate as a critical  
process in the solid **electrolyte** interphase formation  
mechanism.

IT 67-71-0, Dimethyl sulfone 75-05-8, Acetonitrile,  
uses 96-48-0,  $\gamma$ -Butyrolactone 3967-54-2,  
Chloroethylene carbonate  
(important role of solvent cointercalation in graphite  
exfoliation)

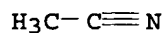
RN 67-71-0 HCAPLUS

CN Methane, sulfonylbis- (9CI) (CA INDEX NAME)



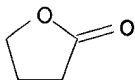
RN 75-05-8 HCAPLUS

CN Acetonitrile (8CI, 9CI) (CA INDEX NAME)



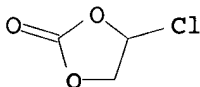
RN 96-48-0 HCAPLUS

CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



RN 3967-54-2 HCAPLUS

CN 1,3-Dioxolan-2-one, 4-chloro- (9CI) (CA INDEX NAME)



CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
Section cross-reference(s): 72

IT Battery anodes

Battery **electrolytes**

Exfoliation

Intercalation

(important role of solvent cointercalation in graphite  
exfoliation)

IT 67-71-0, Dimethyl sulfone 75-05-8, Acetonitrile,  
uses 96-48-0,  $\gamma$ -Butyrolactone 105-58-8,  
Diethylcarbonate 108-32-7, 1,3-Dioxolan-2-one, 4-methyl-  
274-09-9, 1,3-Benzodioxole 623-53-0, Ethyl methyl carbonate  
872-36-6, Vinylene carbonate 3741-38-6, Glycol sulfite  
3967-54-2, Chloroethylene carbonate 7782-42-5, Graphite,  
uses 36368-39-5 51260-48-1

(important role of solvent cointercalation in graphite  
exfoliation)

REFERENCE COUNT: 35 THERE ARE 35 CITED REFERENCES AVAILABLE  
FOR THIS RECORD. ALL CITATIONS AVAILABLE  
IN THE RE FORMAT

L41 ANSWER 21 OF 25 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2000:504812 HCAPLUS

DOCUMENT NUMBER: 133:107332

TITLE: Dilatometric investigations of graphite

electrodes in nonaqueous lithium battery  
**electrolytes**

AUTHOR(S): Winter, Martin; Wrodnigg, Gerhard H.;  
Besenhard, Jurgen O.; Biberacher, Werner;  
Novak, Petr

CORPORATE SOURCE: Institute for Chemical Technology of Inorganic  
Materials, Graz University of Technology,  
Graz, AT-8010, Austria

SOURCE: Journal of the Electrochemical Society (2000),  
147(7), 2427-2431  
CODEN: JESOAN; ISSN: 0013-4651

PUBLISHER: Electrochemical Society

DOCUMENT TYPE: Journal

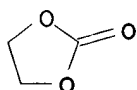
LANGUAGE: English

AB A relatively uncommon technique known as in situ electrochem.  
dilatometry can be used to record the macroscopic expansion  
(dilatation) and contraction of graphite samples during  
charge/discharge in Li<sup>+</sup> cation-containing nonaq. **electrolytes**  
. Several **electrolytes** based on solvent mixts. such as  
ethylene carbonate/dimethyl carbonate, pure propylene carbonate  
(PC), and PC with addnl. solvents (ethylene sulfite or  
chloroethylene carbonate) have been investigated. The dilatometer  
yields a clear distinction between solvated lithium  
intercalation/deintercalation occurring in pure PC (relative  
expansion of the order of >100%) and the corresponding unsolvated  
processes occurring in the other **electrolytes** (theor.  
relative expansion of the order of 10%). Exfoliation of graphite  
due to solvated lithium intercalation may destroy the graphite  
sample. The penetration of **electrolyte** into pores or  
fissures of the exfoliated sample can also be monitored by  
dilatometry. Hence, dilatometry provides relevant information  
concerning the feasibility of a given **electrolytic** solution  
for rechargeable lithium-ion cells with graphite as the neg.  
electrode. Limitations and advantages of the electrochem.  
dilatometer and specific exptl. features of the instrument are  
addressed.

IT 96-49-1, Ethylene carbonate 3967-54-2,  
Chloroethylene carbonate 90076-65-6  
(dilatometric investigations of graphite electrodes in nonaq.  
lithium battery **electrolytes**)

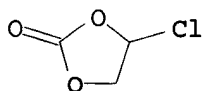
RN 96-49-1 HCAPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



RN 3967-54-2 HCAPLUS

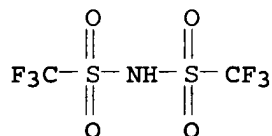
CN 1,3-Dioxolan-2-one, 4-chloro- (9CI) (CA INDEX NAME)



RN 90076-65-6 HCAPLUS

CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-

, lithium salt (9CI) (CA INDEX NAME)



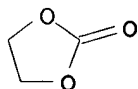
● Li

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 ST lithium battery nonaq **electrolyte** graphite electrode  
 dilatometry  
 IT Battery anodes  
 Battery **electrolytes**  
 Expansion  
 (dilatometric investigations of graphite electrodes in nonaq.  
 lithium battery **electrolytes**)  
 IT Secondary batteries  
 (lithium; dilatometric investigations of graphite electrodes in  
 nonaq. lithium battery **electrolytes**)  
 IT **96-49-1**, Ethylene carbonate 108-32-7, Propylene  
 carbonate 616-38-6, Dimethyl carbonate 3741-38-6, Ethylene  
 sulfite **3967-54-2**, Chloroethylene carbonate 7782-42-5,  
 Graphite, uses **90076-65-6**  
 (dilatometric investigations of graphite electrodes in nonaq.  
 lithium battery **electrolytes**)  
 REFERENCE COUNT: 25 THERE ARE 25 CITED REFERENCES AVAILABLE  
 FOR THIS RECORD. ALL CITATIONS AVAILABLE  
 IN THE RE FORMAT

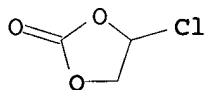
L41 ANSWER 22 OF 25 HCAPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2000:454463 HCAPLUS  
 DOCUMENT NUMBER: 133:76708  
 TITLE: Secondary nonaqueous **electrolyte**  
 batteries using haloorganic compounds  
 INVENTOR(S): Suzuki, Hitoshi; Suzuki, Hirofumi; Deshamp,  
 Marc  
 PATENT ASSIGNEE(S): Mitsubishi Chemical Industries Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2000188128	A2	20000704	JP 1998-366567	1998 1224
PRIORITY APPLN. INFO.:				JP 1998-366567 1998 1224

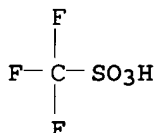
- AB The batteries use Li-intercalatable anodes, cathodes, **electrolyte** solns. containing Li salts dissolved in nonaq. solvents containing haloorg. compds., and valve metals or their alloys at the parts to be in contact with the **electrolyte** solns. on cathode current collectors and the parts elec. connected to the collectors. The valve metals prevent oxidative decomposition of the haloorg. compds. and the batteries show good low-temperature characteristics, long-term stability, and long cycle life.
- IT **96-49-1**, Ethylene carbonate **3967-54-2**, Chloroethylene carbonate **33454-82-9**, Lithium trifluoromethanesulfonate **90076-65-6**, Lithium bis(trifluoromethylsulfonyl)amide (secondary Li batteries using valve metals and nonaq. **electrolyte** solns. containing haloorg. compds.)
- RN **96-49-1** HCAPLUS
- CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



- RN **3967-54-2** HCAPLUS
- CN 1,3-Dioxolan-2-one, 4-chloro- (9CI) (CA INDEX NAME)

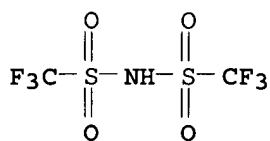


- RN **33454-82-9** HCAPLUS
- CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

- RN **90076-65-6** HCAPLUS
- CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (9CI) (CA INDEX NAME)



## ● Li

- IC ICM H01M010-40  
ICS H01M010-40
- CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
- ST lithium battery **electrolyte** solvent haloorg compd; valve metal nonaq **electrolyte** lithium battery
- IT Battery cathodes  
(Li-transition metal mixed oxides; secondary Li batteries using valve metals and nonaq. **electrolyte** solns. containing haloorg. compds.)
- IT Carboxylic acids, uses  
(esters, halogenated; secondary Li batteries using valve metals and nonaq. **electrolyte** solns. containing haloorg. compds.)
- IT Battery anodes  
(graphite; secondary Li batteries using valve metals and nonaq. **electrolyte** solns. containing haloorg. compds.)
- IT Carbonates, uses  
Ethers, uses  
(halogenated; secondary Li batteries using valve metals and nonaq. **electrolyte** solns. containing haloorg. compds.)
- IT Secondary batteries  
(lithium; secondary Li batteries using valve metals and nonaq. **electrolyte** solns. containing haloorg. compds.)
- IT Halides  
(organic; secondary Li batteries using valve metals and nonaq. **electrolyte** solns. containing haloorg. compds.)
- IT Battery **electrolytes**  
(secondary Li batteries using valve metals and nonaq. **electrolyte** solns. containing haloorg. compds.)
- IT Metals, uses  
(valve; secondary Li batteries using valve metals and nonaq. **electrolyte** solns. containing haloorg. compds.)
- IT Aluminum alloy  
(secondary Li batteries using valve metals and nonaq. **electrolyte** solns. containing haloorg. compds.)
- IT 7782-42-5, KS 44, uses  
(anode; secondary Li batteries using valve metals and nonaq. **electrolyte** solns. containing haloorg. compds.)
- IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 111-44-4, Bis(2-chloroethyl) ether 515-84-4, Ethyl trichloroacetate 3967-54-2, Chloroethylene carbonate 7429-90-5, Aluminum, uses 7791-03-9, Lithium perchlorate 12190-79-3, Cobalt lithium oxide (CoLiO<sub>2</sub>) 14283-07-9, Lithium tetrafluoroborate 18424-17-4, Lithium hexafluoroantimonate 21324-40-3, Lithium hexafluorophosphate 33454-82-9, Lithium trifluoromethanesulfonate 90076-65-6, Lithium bis(trifluoromethylsulfonyl)amide 132404-42-3, Lithium tris(trifluoromethylsulfonyl)methanide

132843-44-8, Lithium bis(pentafluoroethanesulfonyl)amide  
176719-70-3, Lithium trifluoromethanesulfonyl(nonafluorobutanesulfonyl)imide

(secondary Li batteries using valve metals and nonaq.  
**electrolyte** solns. containing haloorg. compds.)

L41 ANSWER 23 OF 25 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1999:465192 HCAPLUS

DOCUMENT NUMBER: 131:288762

TITLE: FTIR and DEMS investigations on the  
electroreduction of chloroethylene  
carbonate-based **electrolyte**  
solutions for lithium-ion cells

AUTHOR(S): Winter, M.; Imhof, R.; Joho, F.; Nova, P.

CORPORATE SOURCE: Institute for Chemical Technology of Inorganic  
Materials, Graz University of Technology,  
Graz, A-8010, Austria

SOURCE: Journal of Power Sources (1999), 81-82,  
818-823

CODEN: JPSODZ; ISSN: 0378-7753

PUBLISHER: Elsevier Science S.A.

DOCUMENT TYPE: Journal

LANGUAGE: English

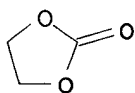
AB Chloroethylene carbonate (ClEC) is decomposed to CO<sub>2</sub> at graphite  
electrodes. We assume that the CO<sub>2</sub> participates in the formation  
of an effective solid **electrolyte** interphase on the  
electrode. Two in-situ techniques, subtractively normalized  
interfacial Fourier transform IR spectroscopy and differential  
electrochem. mass spectrometry, were applied in order to detect  
CO<sub>2</sub> formation and possible secondary reactions. The applied anal.  
methods provided conforming information about the onset of CO<sub>2</sub>  
formation (2.2-2.1 V vs. Li/Li<sup>+</sup>).

IT 96-49-1, Ethylene carbonate 90076-65-6

(FTIR and differential electrochem. mass spectrometry  
investigations on electroredn. of chloroethylene  
carbonate-based **electrolyte** solns. for lithium-ion  
cells)

RN 96-49-1 HCAPLUS

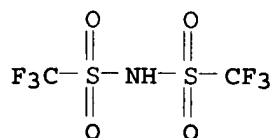
CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



RN 90076-65-6 HCAPLUS

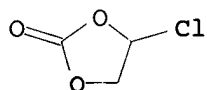
CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-  
, lithium salt (9CI) (CA INDEX NAME)





● Li

IT 3967-54-2, Chloroethylene carbonate  
 (FTIR and differential electrochem. mass spectrometry  
 investigations on electroredn. of chloroethylene  
 carbonate-based **electrolyte** solns. for lithium-ion  
 cells)  
 RN 3967-54-2 HCAPLUS  
 CN 1,3-Dioxolan-2-one, 4-chloro- (9CI) (CA INDEX NAME)



CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 Section cross-reference(s): 72  
 ST lithium battery chloroethylene carbonate **electrolyte**  
 electroredn  
 IT Battery **electrolytes**  
 Reduction, electrochemical  
 (FTIR and differential electrochem. mass spectrometry  
 investigations on electroredn. of chloroethylene  
 carbonate-based **electrolyte** solns. for lithium-ion  
 cells)  
 IT Secondary batteries  
 (lithium; FTIR and differential electrochem. mass spectrometry  
 investigations on electroredn. of chloroethylene  
 carbonate-based **electrolyte** solns. for lithium-ion  
 cells)  
 IT 96-49-1, Ethylene carbonate 7782-42-5, Graphite, uses  
 90076-65-6  
 (FTIR and differential electrochem. mass spectrometry  
 investigations on electroredn. of chloroethylene  
 carbonate-based **electrolyte** solns. for lithium-ion  
 cells)  
 IT 3967-54-2, Chloroethylene carbonate  
 (FTIR and differential electrochem. mass spectrometry  
 investigations on electroredn. of chloroethylene  
 carbonate-based **electrolyte** solns. for lithium-ion  
 cells)  
 IT 124-38-9, Carbon dioxide, formation (nonpreparative)  
 (FTIR and differential electrochem. mass spectrometry  
 investigations on electroredn. of chloroethylene  
 carbonate-based **electrolyte** solns. for lithium-ion  
 cells)  
 REFERENCE COUNT: 14 THERE ARE 14 CITED REFERENCES AVAILABLE  
 FOR THIS RECORD. ALL CITATIONS AVAILABLE  
 IN THE RE FORMAT

L41 ANSWER 24 OF 25 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1998:95386 HCAPLUS

DOCUMENT NUMBER: 128:130228

TITLE: Chloroethylene carbonate, a solvent for lithium-ion cells, evolving CO<sub>2</sub> during reduction

AUTHOR(S): Winter, Martin; Novak, Petr

CORPORATE SOURCE: Electrochem. Section, Paul Scherrer Inst., Villeggen, CH-5232, Switz.

SOURCE: Journal of the Electrochemical Society (1998), 145(2), L27-L30

CODEN: JESOAN; ISSN: 0013-4651

PUBLISHER: Electrochemical Society

DOCUMENT TYPE: Journal

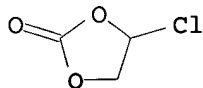
LANGUAGE: English

AB We have investigated the role of chloroethylene carbonate (CIEC) on the formation of the solid-electrolyte interfacial film on graphite electrodes for rechargeable lithium-ion cells. In situ IR spectroelectrochem. expts. have been correlated with galvanostatic charge/discharge measurements. During the first reduction of graphite in a CIEC-based electrolyte, a sloping potential plateau from .apprx.1.7 to .apprx.1.4 V vs Li/Li<sup>+</sup> appears, which we relate to the generation of CO<sub>2</sub>. We assume that the CO<sub>2</sub> generated from CIEC is an intermediate reduction product that undergoes further reactions that contribute to the formation of the protective film.

IT 3967-54-2, Chloroethylene carbonate  
(electrolyte additive; chloroethylene carbonate solvent for lithium-ion cells evolving CO<sub>2</sub> during reduction)

RN 3967-54-2 HCAPLUS

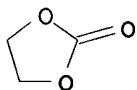
CN 1,3-Dioxolan-2-one, 4-chloro- (9CI) (CA INDEX NAME)



IT 96-49-1, Ethylene carbonate  
(electrolyte containing; chloroethylene carbonate solvent for lithium-ion cells evolving CO<sub>2</sub> during reduction)

RN 96-49-1 HCAPLUS

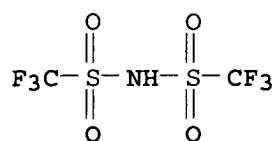
CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



IT 90076-65-6  
(electrolyte; chloroethylene carbonate solvent for lithium-ion cells evolving CO<sub>2</sub> during reduction)

RN 90076-65-6 HCAPLUS

CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (9CI) (CA INDEX NAME)



● Li

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 IT Electrode-**electrolyte** interface  
 (chloroethylene carbonate solvent for lithium-ion cells  
 evolving CO<sub>2</sub> during reduction)  
 IT 3967-54-2, Chloroethylene carbonate  
 (**electrolyte** additive; chloroethylene carbonate  
 solvent for lithium-ion cells evolving CO<sub>2</sub> during reduction)  
 IT 96-49-1, Ethylene carbonate 616-38-6, Dimethyl carbonate  
 (**electrolyte** containing; chloroethylene carbonate solvent  
 for lithium-ion cells evolving CO<sub>2</sub> during reduction)  
 IT 90076-65-6  
 (**electrolyte**; chloroethylene carbonate solvent for  
 lithium-ion cells evolving CO<sub>2</sub> during reduction)  
 REFERENCE COUNT: 38 THERE ARE 38 CITED REFERENCES AVAILABLE  
 FOR THIS RECORD. ALL CITATIONS AVAILABLE  
 IN THE RE FORMAT

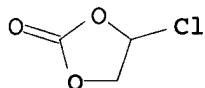
L41 ANSWER 25 OF 25 HCAPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 1997:101101 HCAPLUS  
 DOCUMENT NUMBER: 126:106587  
 TITLE: Nonaqueous **electrolyte** batteries  
 having reactive additives in  
**electrolytes**  
 INVENTOR(S): Jinno, Maruo; Uehara, Mayumi; Sakurai,  
 Atsushi; Nishio, Koji; Saito, Toshihiko  
 PATENT ASSIGNEE(S): Sanyo Denki Kk, Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 08321313	A2	19961203	JP 1995-150845	1995 0524
PRIORITY APPLN. INFO.:			JP 1995-150845	1995 0524

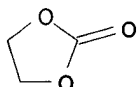
AB In the batteries having cathodes, anodes using Li as an active  
 mass, nonaq. **electrolytes** obtained by dissolving  
 LiCF<sub>3</sub>SO<sub>3</sub> or LiPF<sub>6</sub> in solvents of ethylene carbonate, propylene  
 carbonate, and/or butylene carbonate having high dielec. constant,  
 and separators, the **electrolytes** contain 1-20% additives

of tri-Me borate, tri-Et borate, di-Me Et boronate, Me Et borinate, Me<sub>3</sub>P, tri-Me phosphite, tri-Et phosphite, tri-Me phosphate, tri-Et phosphate, (MeO)<sub>4</sub>Ti, (EtO)<sub>4</sub>Ti, Al methoxide, Al ethoxide, CCl<sub>4</sub>, 1,2-dichloroethane, fluorobenzene, chloromethyl Et ether, 1,2-dichloroethyl Et ether, β-methoxyethoxymethyl chloride, 1,2-bis(2-chloroethoxy)ethane, 3-bromofuran, cetyltrimethylammonium chloride, 4-chloro-1,3-dioxolan-2-one, Mg(NO<sub>3</sub>)<sub>2</sub>, Fe(NO<sub>3</sub>)<sub>3</sub>, FeI<sub>3</sub>, Zn(NO<sub>3</sub>)<sub>2</sub>, ZnCO<sub>3</sub>, In(NO<sub>3</sub>)<sub>3</sub>, Ga(NO<sub>3</sub>)<sub>3</sub>, and/or HF. The **electrolytes** may contain 1,2-dimethoxyethane. Since the additives react with Li in anodes and the solvents and the solutes in the **electrolytes** to form coatings on the anodes for prevention of the reaction between the **electrolytes** and the anodes, the batteries have improved storage property.

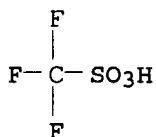
IT 3967-54-2, 4-Chloro-1,3-dioxolan-2-one  
 (electrolyte additive; nonaq. batteries having reactive additives in **electrolytes** for storage)  
 RN 3967-54-2 HCAPLUS  
 CN 1,3-Dioxolan-2-one, 4-chloro- (9CI) (CA INDEX NAME)



IT 96-49-1, Ethylene carbonate  
 (electrolyte solvent; nonaq. batteries having reactive additives in **electrolytes** for storage)  
 RN 96-49-1 HCAPLUS  
 CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



IT 33454-82-9, Lithium trifluoromethanesulfonate  
 (electrolyte; nonaq. batteries having reactive additives in **electrolytes** for storage)  
 RN 33454-82-9 HCAPLUS  
 CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

IC ICM H01M006-16  
 ICS H01M010-40  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST nonaq battery **electrolyte** reactive additive storage;  
lithium anode nonaq battery **electrolyte** additive

IT Battery **electrolytes**  
(nonaq. batteries having reactive additives in  
**electrolytes** for storage)

IT 7439-93-2, Lithium, uses  
(anode active mass; nonaq. batteries having reactive additives  
in **electrolytes** for storage)

IT 56-23-5, Carbon tetrachloride, uses 78-40-0, Triethyl phosphate  
107-06-2, 1,2-Dichloroethane, uses 112-02-7,  
Cetyltrimethylammonium chloride 112-26-5, 1,2-Bis(2-  
chloroethoxy)ethane 121-43-7, Trimethyl borate 121-45-9,  
Trimethyl phosphite 122-52-1, Triethyl phosphite 150-46-9,  
Triethyl borate 462-06-6, Fluorobenzene 512-56-1, Trimethyl  
phosphate 555-75-9, Aluminum ethoxide 594-09-2,  
Trimethylphosphine 623-46-1, 1,2-Dichloroethyl ethyl ether  
865-31-6, Aluminum methoxide 992-92-7, Tetramethylorthotitanate  
3087-36-3, Tetraethylorthotitanate 3188-13-4, Chloromethyl ethyl  
ether 3486-35-9, Zinc carbonate 3967-54-2,  
4-Chloro-1,3-dioxolan-2-one 3970-21-6,  $\beta$ -  
Methoxyethoxymethyl chloride 7318-82-3, Dimethyl ethyl boronate  
7397-46-8, Methyl diethyl borinate 7664-39-3, Hydrofluoric acid,  
uses 7779-88-6, Zinc nitrate 10377-60-3, Magnesium nitrate  
10421-48-4, Iron(III) nitrate 13494-90-1, Gallium nitrate  
13770-61-1, Indium nitrate 15600-49-4, Iron iodide (FeI<sub>3</sub>)  
22037-28-1, 3-Bromofuran  
(**electrolyte** additive; nonaq. batteries having  
reactive additives in **electrolytes** for storage)

IT 96-49-1, Ethylene carbonate 108-32-7, Propylene  
carbonate 110-71-4, 1,2-Dimethoxyethane 4437-85-8, Butylene  
carbonate  
(**electrolyte** solvent; nonaq. batteries having  
reactive additives in **electrolytes** for storage)

IT 21324-40-3, Lithium hexafluorophosphate 33454-82-9,  
Lithium trifluoromethanesulfonate  
(**electrolyte**; nonaq. batteries having reactive  
additives in **electrolytes** for storage)